FIG.1

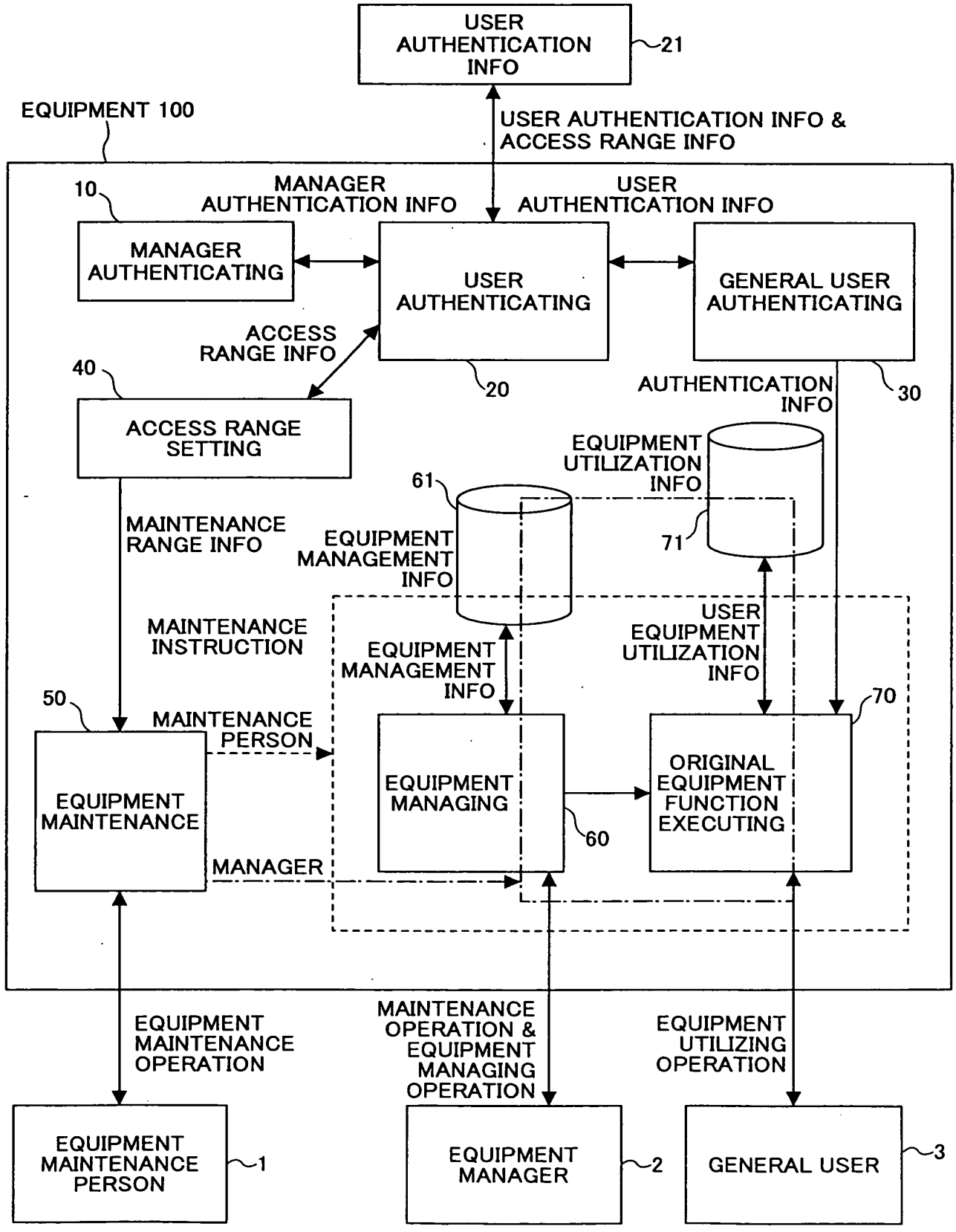

USER AUTHENTICATION INFO
21
EQUIPMENT 100
USER AUTHENTICATION INFO & ACCESS RANGE INFO
10
MANAGER AUTHENTICATION INFO
USER AUTHENTICATION INFO
MANAGER AUTHENTICATING
USER AUTHENTICATING
GENERAL USER AUTHENTICATING
ACCESS RANGE INFO
20
AUTHENTICATION INFO
30
40
ACCESS RANGE SETTING
EQUIPMENT UTILIZATION INFO
61
71
MAINTENANCE RANGE INFO
EQUIPMENT MANAGEMENT INFO
MAINTENANCE INSTRUCTION
EQUIPMENT MANAGEMENT INFO
USER EQUIPMENT UTILIZATION INFO
50
MAINTENANCE PERSON
70
EQUIPMENT MAINTENANCE
EQUIPMENT MANAGING
ORIGINAL EQUIPMENT FUNCTION EXECUTING
60
MANAGER
EQUIPMENT MAINTENANCE OPERATION
MAINTENANCE OPERATION & EQUIPMENT MANAGING OPERATION
EQUIPMENT UTILIZING OPERATION
EQUIPMENT MAINTENANCE PERSON
1
EQUIPMENT MANAGER
2
GENERAL USER
3

FIG.2

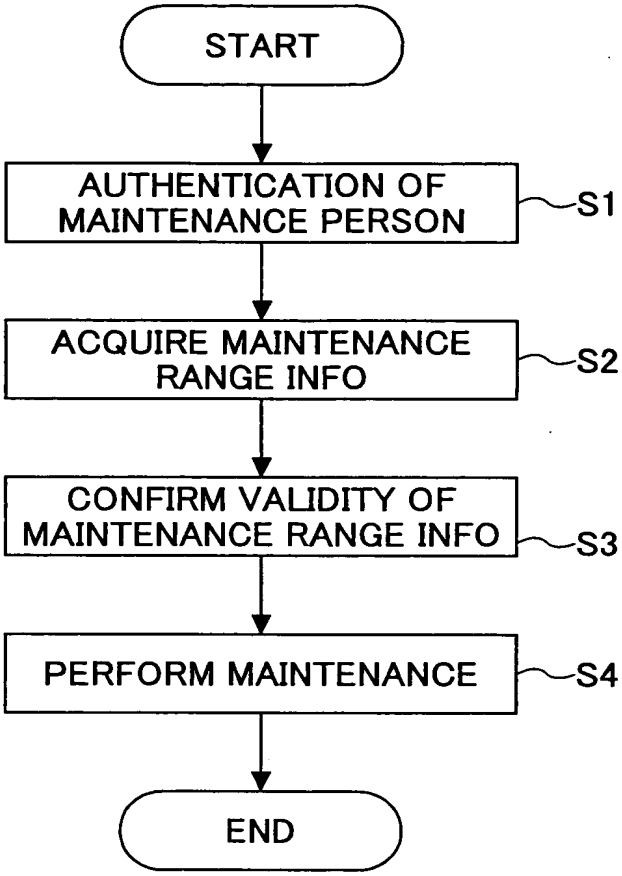

START
AUTHENTICATION OF MAINTENANCE PERSON
S1
ACQUIRE MAINTENANCE RANGE INFO
S2
CONFIRM VALIDITY OF MAINTENANCE RANGE INFO
S3
PERFORM MAINTENANCE
S4
END

FIG.3

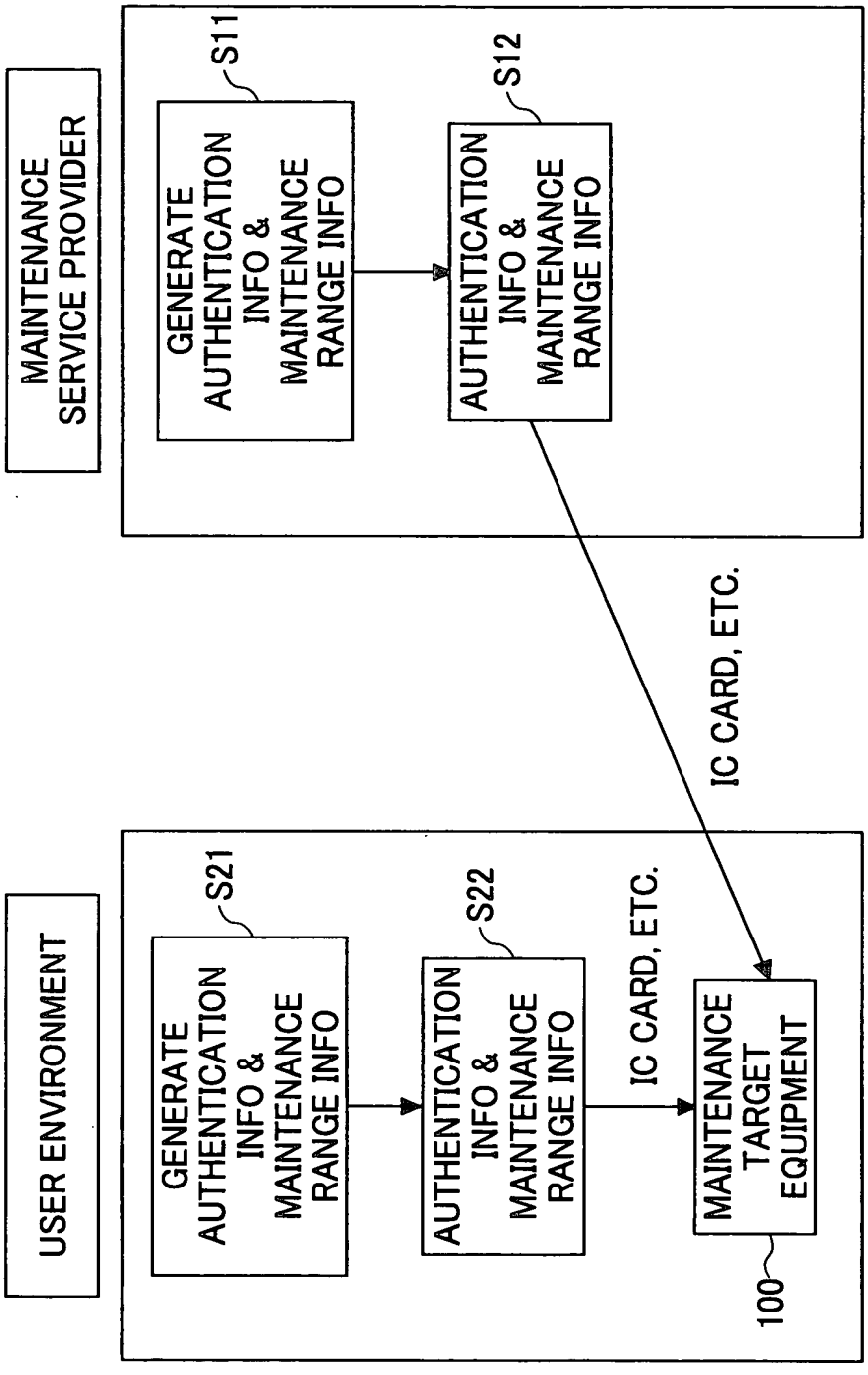

MAINTENANCE SERVICE PROVIDER
GENERATE AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S11
AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S12
IC CARD, ETC.
USER ENVIRONMENT
GENERATE AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S21
AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S22
IC CARD, ETC.
MAINTENANCE TARGET EQUIPMENT
100

FIG.4

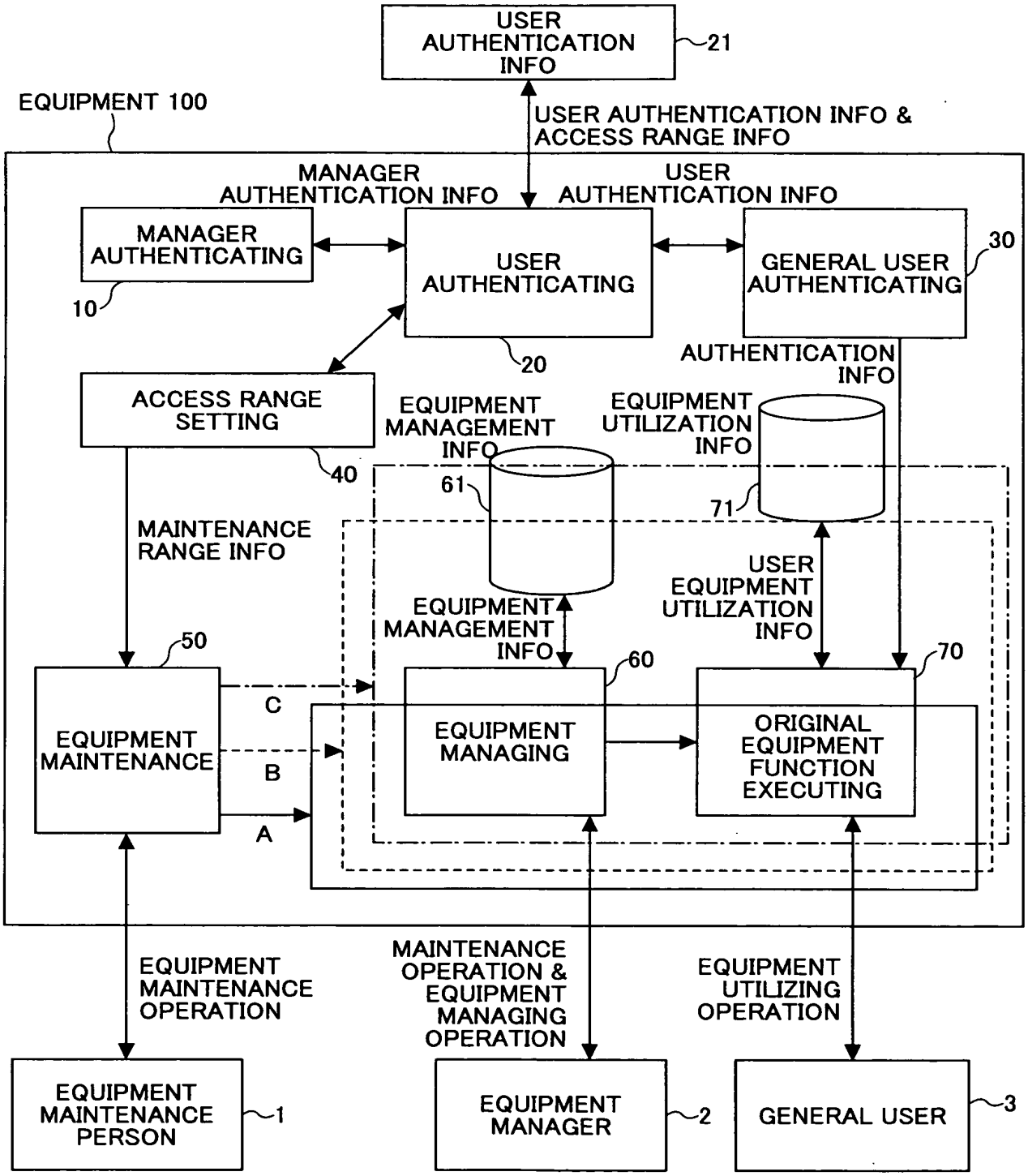

USER AUTHENTICATION INFO
21
EQUIPMENT 100
USER AUTHENTICATION INFO & ACCESS RANGE INFO
MANAGER AUTHENTICATION INFO
USER AUTHENTICATION INFO
MANAGER AUTHENTICATING
10
USER AUTHENTICATING
20
GENERAL USER AUTHENTICATING
30
AUTHENTICATION INFO
ACCESS RANGE SETTING
40
EQUIPMENT MANAGEMENT INFO
61
EQUIPMENT UTILIZATION INFO
71
MAINTENANCE RANGE INFO
USER EQUIPMENT UTILIZATION INFO
EQUIPMENT MANAGEMENT INFO
50
60
70
C
B
A
EQUIPMENT MAINTENANCE
EQUIPMENT MANAGING
ORIGINAL EQUIPMENT FUNCTION EXECUTING
EQUIPMENT MAINTENANCE OPERATION
MAINTENANCE OPERATION & EQUIPMENT MANAGING OPERATION
EQUIPMENT UTILIZING OPERATION
EQUIPMENT MAINTENANCE PERSON
1
EQUIPMENT MANAGER
2
GENERAL USER
3

FIG.5

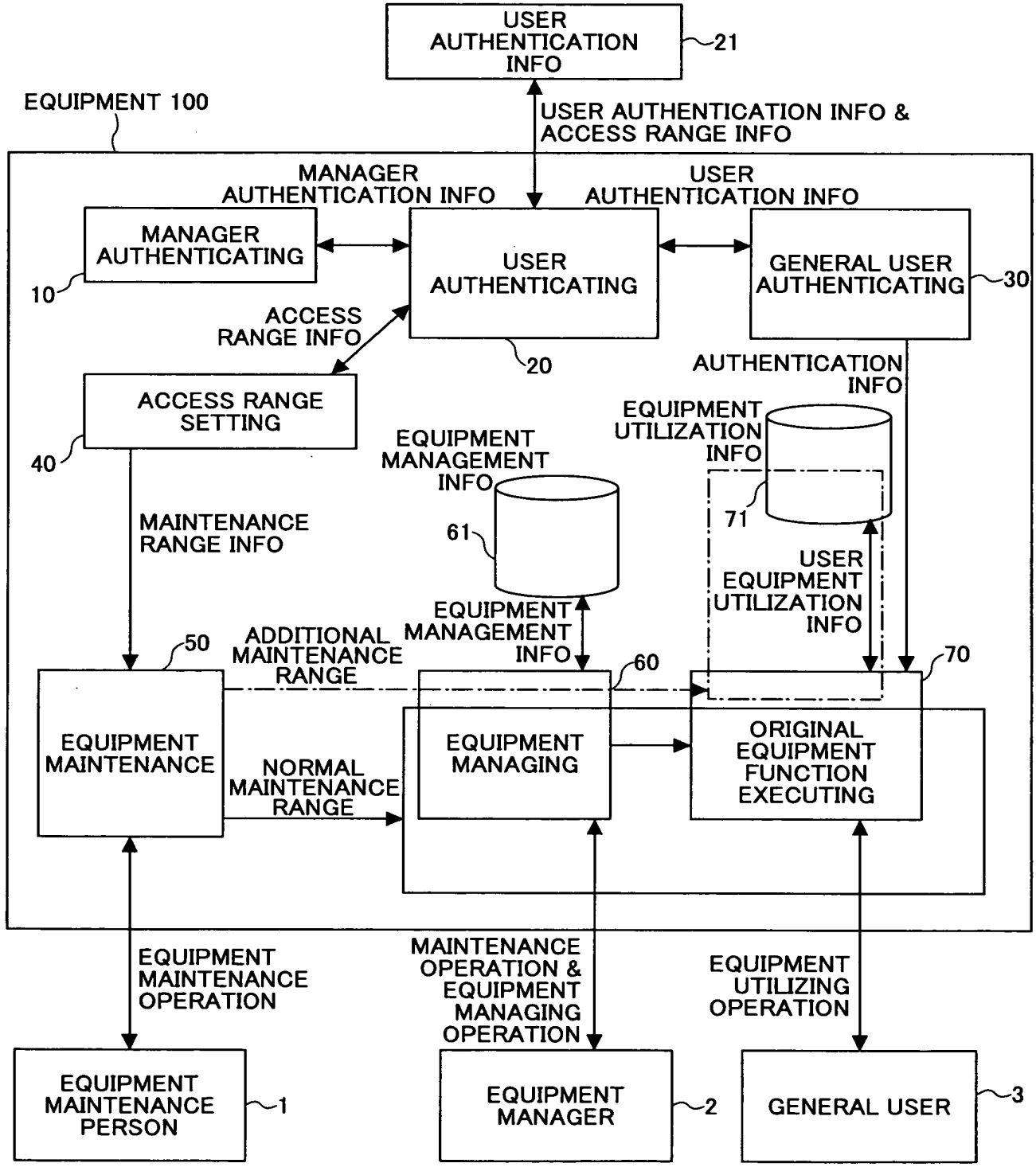

USER AUTHENTICATION INFO
21
EQUIPMENT 100
USER AUTHENTICATION INFO & ACCESS RANGE INFO
MANAGER AUTHENTICATION INFO
USER AUTHENTICATION INFO
MANAGER AUTHENTICATING
10
USER AUTHENTICATING
20
GENERAL USER AUTHENTICATING
30
ACCESS RANGE INFO
AUTHENTICATION INFO
ACCESS RANGE SETTING
40
EQUIPMENT UTILIZATION INFO
EQUIPMENT MANAGEMENT INFO
71
MAINTENANCE RANGE INFO
61
USER EQUIPMENT UTILIZATION INFO
EQUIPMENT MANAGEMENT INFO
50
ADDITIONAL MAINTENANCE RANGE
60
70
EQUIPMENT MAINTENANCE
NORMAL MAINTENANCE RANGE
EQUIPMENT MANAGING
ORIGINAL EQUIPMENT FUNCTION EXECUTING
EQUIPMENT MAINTENANCE OPERATION
MAINTENANCE OPERATION & EQUIPMENT MANAGING OPERATION
EQUIPMENT UTILIZING OPERATION
EQUIPMENT MAINTENANCE PERSON
1
EQUIPMENT MANAGER
2
GENERAL USER
3

FIG.6

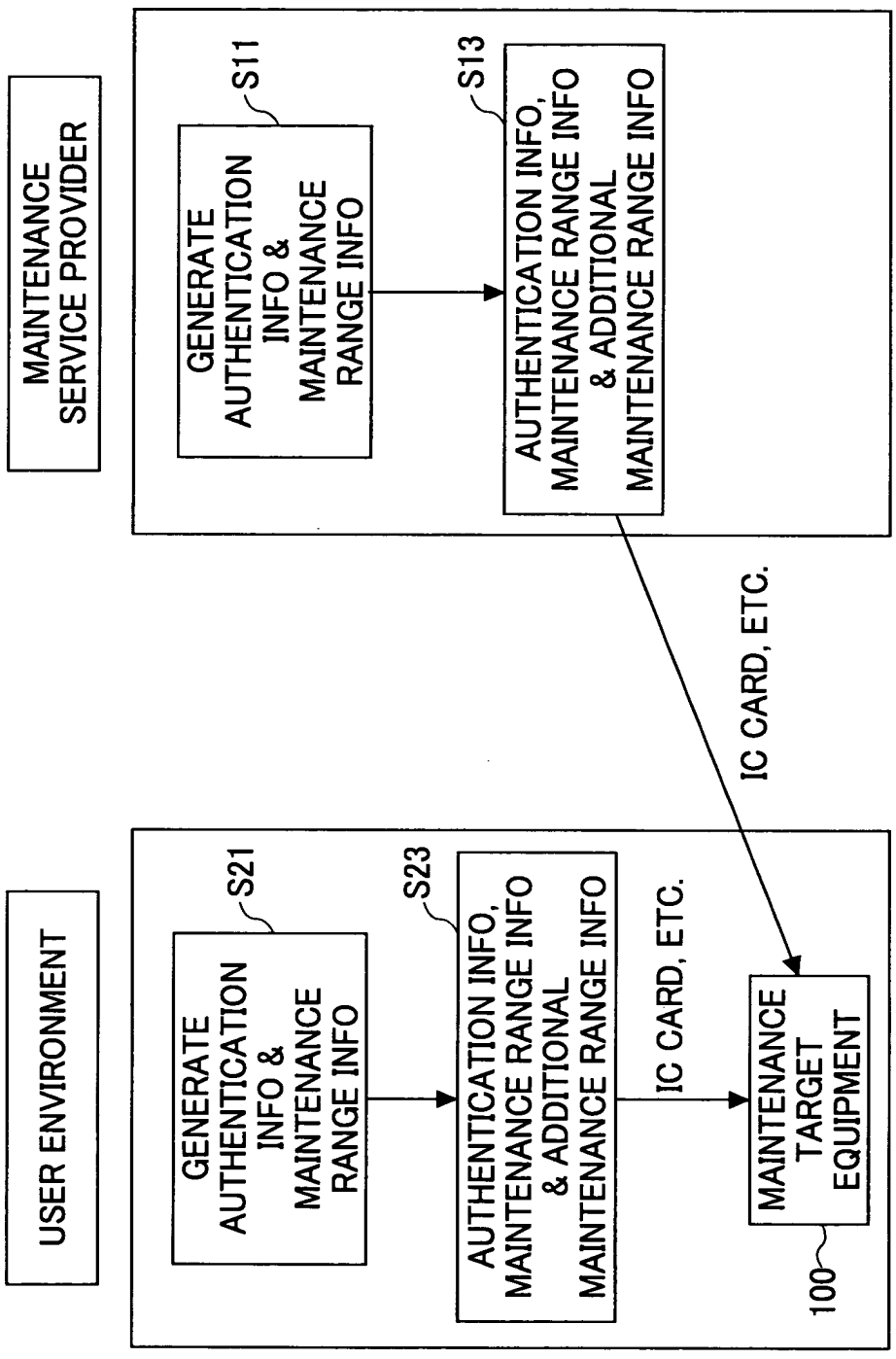

MAINTENANCE SERVICE PROVIDER
GENERATE AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S11
AUTHENTICATION INFO, MAINTENANCE RANGE INFO & ADDITIONAL MAINTENANCE RANGE INFO
S13
IC CARD, ETC.
USER ENVIRONMENT
GENERATE AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S21
AUTHENTICATION INFO, MAINTENANCE RANGE INFO & ADDITIONAL MAINTENANCE RANGE INFO
S23
IC CARD, ETC.
MAINTENANCE TARGET EQUIPMENT
100

FIG.7

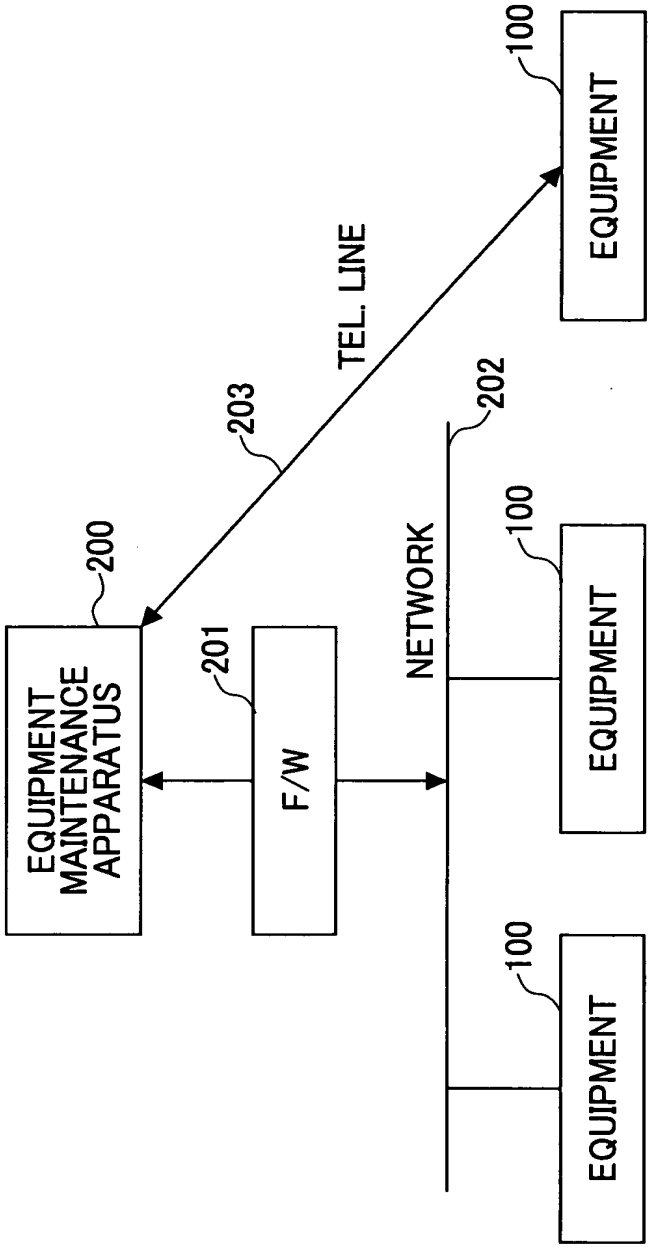

EQUIPMENT MAINTENANCE APPARATUS
200
F/W
201
NETWORK
202
TEL. LINE
203
EQUIPMENT
100
EQUIPMENT
100
EQUIPMENT
100

FIG.8

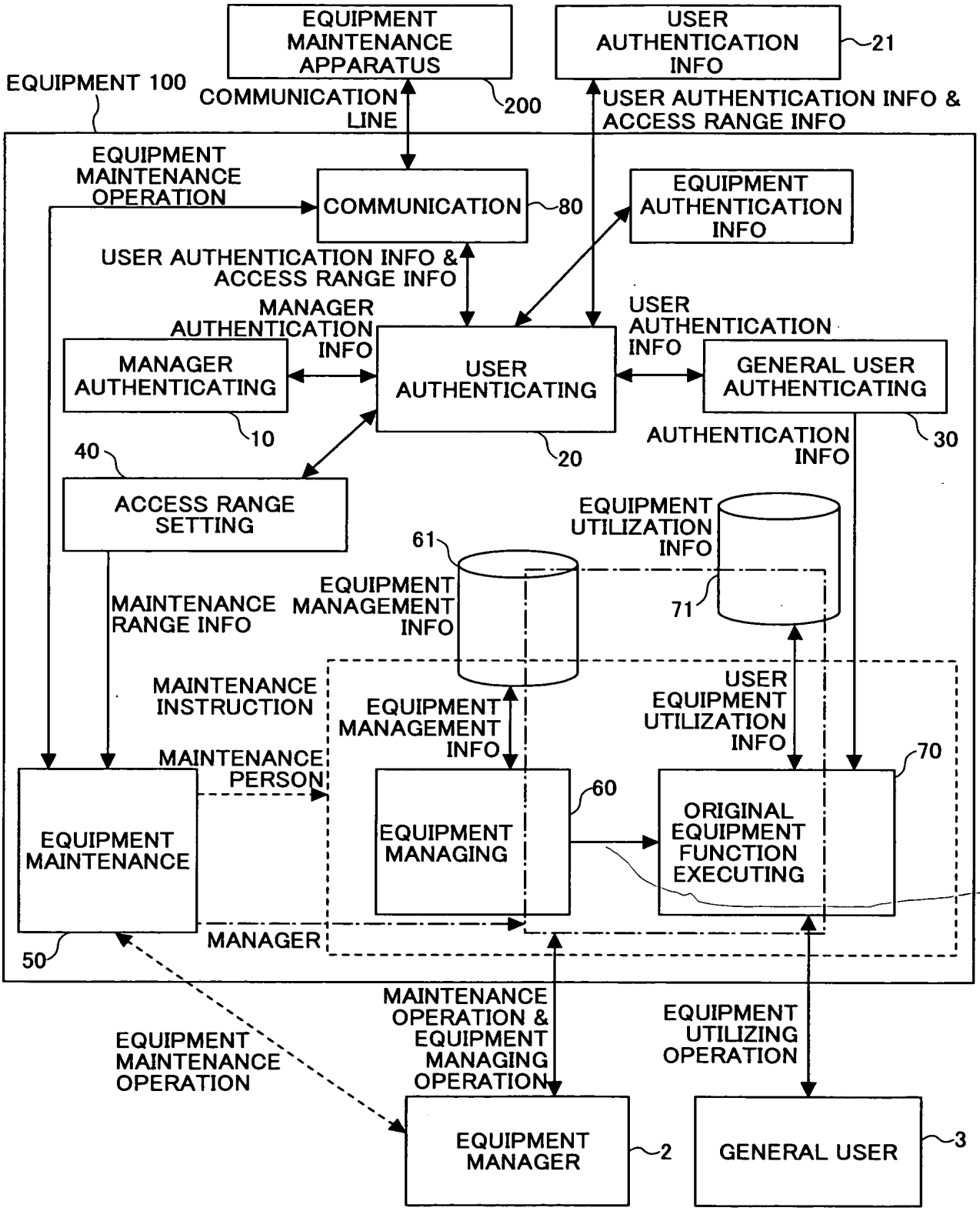

EQUIPMENT MAINTENANCE APPARATUS
200
USER AUTHENTICATION INFO
21
EQUIPMENT 100
COMMUNICATION LINE
USER AUTHENTICATION INFO & ACCESS RANGE INFO
EQUIPMENT MAINTENANCE OPERATION
COMMUNICATION
80
EQUIPMENT AUTHENTICATION INFO
USER AUTHENTICATION INFO & ACCESS RANGE INFO
MANAGER AUTHENTICATION INFO
USER AUTHENTICATION INFO
MANAGER AUTHENTICATING
10
USER AUTHENTICATING
20
GENERAL USER AUTHENTICATING
30
AUTHENTICATION INFO
40
ACCESS RANGE SETTING
EQUIPMENT UTILIZATION INFO
61
71
EQUIPMENT MANAGEMENT INFO
MAINTENANCE RANGE INFO
MAINTENANCE INSTRUCTION
EQUIPMENT MANAGEMENT INFO
USER EQUIPMENT UTILIZATION INFO
70
MAINTENANCE PERSON
60
EQUIPMENT MAINTENANCE
EQUIPMENT MANAGING
ORIGINAL EQUIPMENT FUNCTION EXECUTING
MANAGER
50
MAINTENANCE OPERATION & EQUIPMENT MANAGING OPERATION
EQUIPMENT UTILIZING OPERATION
EQUIPMENT MAINTENANCE OPERATION
EQUIPMENT MANAGER
2
GENERAL USER
3

FIG.9

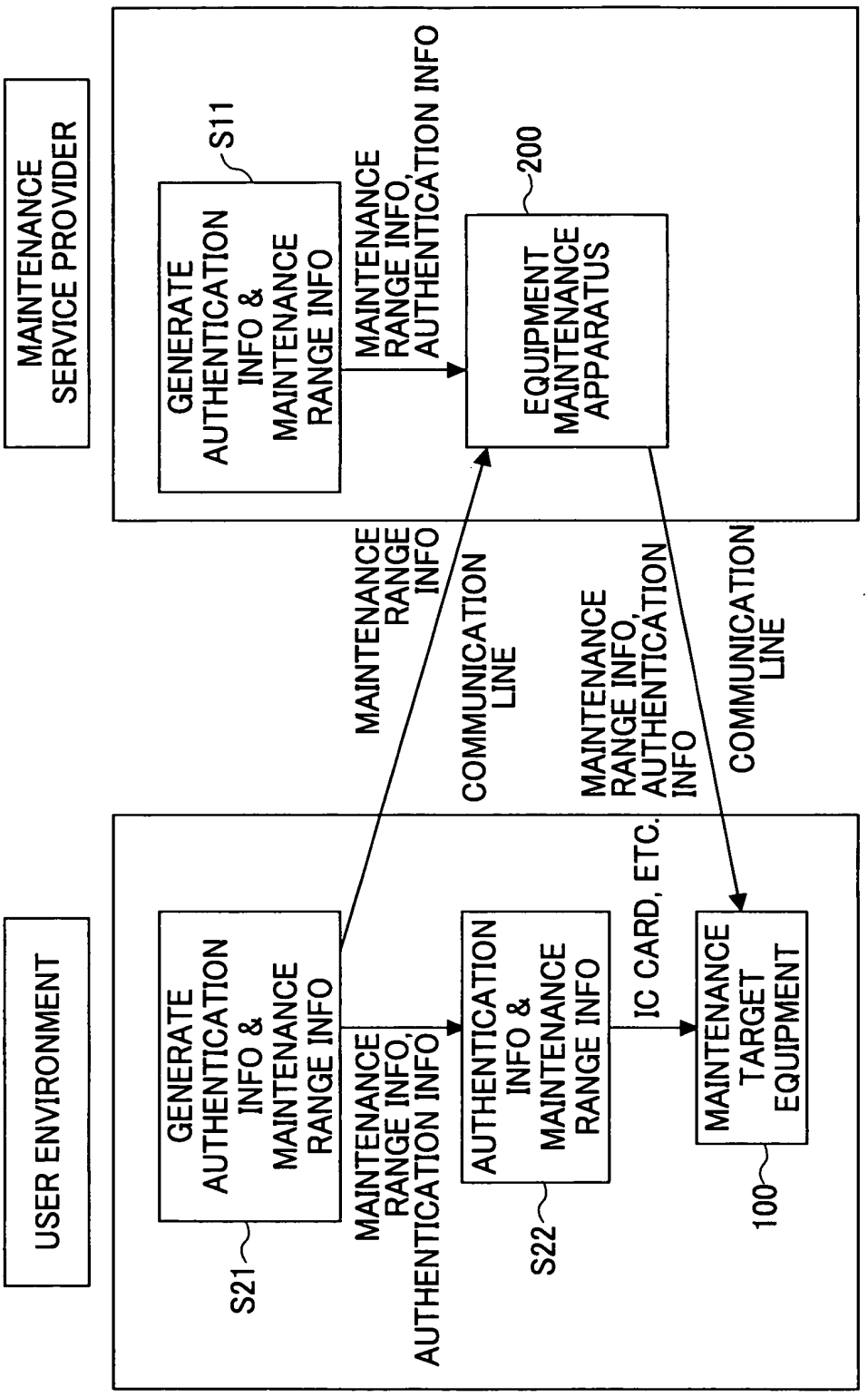

MAINTENANCE SERVICE PROVIDER
USER ENVIRONMENT
GENERATE AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S11
MAINTENANCE RANGE INFO, AUTHENTICATION INFO
EQUIPMENT MAINTENANCE APPARATUS
200
MAINTENANCE RANGE INFO
COMMUNICATION LINE
MAINTENANCE RANGE INFO, AUTHENTICATION INFO
COMMUNICATION LINE
GENERATE AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S21
MAINTENANCE RANGE INFO, AUTHENTICATION INFO
AUTHENTICATION INFO & MAINTENANCE RANGE INFO
S22
IC CARD, ETC.
MAINTENANCE TARGET EQUIPMENT
100

FIG.10

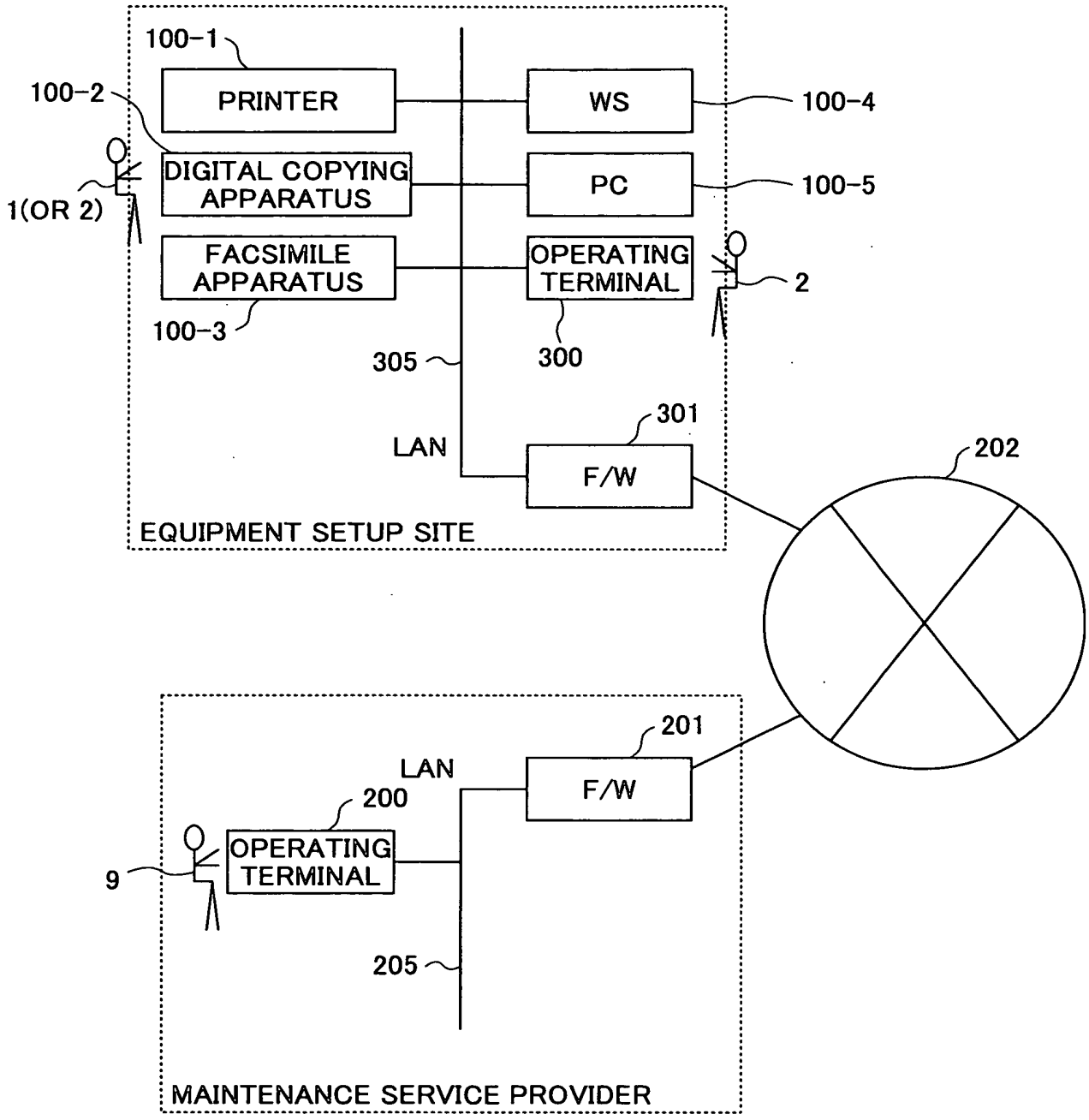

100-1
100-2
PRINTER
WS
100-4
DIGITAL COPYING APPARATUS
PC
100-5
1(OR 2)
FACSIMILE APPARATUS
OPERATING TERMINAL
2
100-3
300
305
301
LAN
F/W
202
EQUIPMENT SETUP SITE
201
LAN
F/W
200
OPERATING TERMINAL
9
205
MAINTENANCE SERVICE PROVIDER

FIG.11

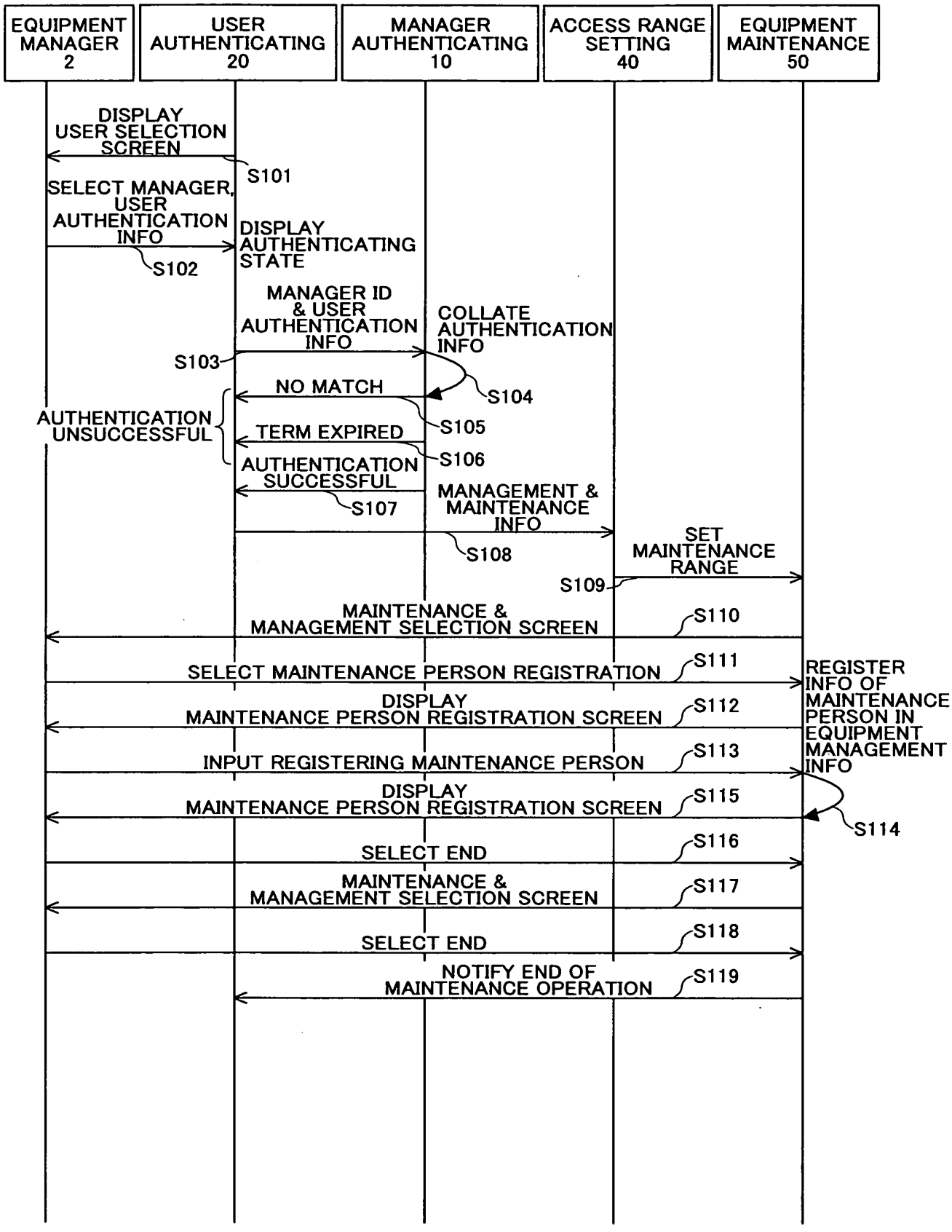

EQUIPMENT MANAGER 2
USER AUTHENTICATING 20
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S101
SELECT MANAGER, USER AUTHENTICATION INFO
S102
DISPLAY AUTHENTICATING STATE
MANAGER ID & USER AUTHENTICATION INFO
S103
COLLATE AUTHENTICATION INFO
S104
NO MATCH
S105
AUTHENTICATION UNSUCCESSFUL
TERM EXPIRED
S106
AUTHENTICATION SUCCESSFUL
S107
MANAGEMENT & MAINTENANCE INFO
S108
SET MAINTENANCE RANGE
S109
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S110
SELECT MAINTENANCE PERSON REGISTRATION
S111
REGISTER INFO OF MAINTENANCE PERSON IN EQUIPMENT MANAGEMENT INFO
DISPLAY MAINTENANCE PERSON REGISTRATION SCREEN
S112
INPUT REGISTERING MAINTENANCE PERSON
S113
DISPLAY MAINTENANCE PERSON REGISTRATION SCREEN
S115
S114
SELECT END
S116
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S117
SELECT END
S118
NOTIFY END OF MAINTENANCE OPERATION
S119

FIG.12

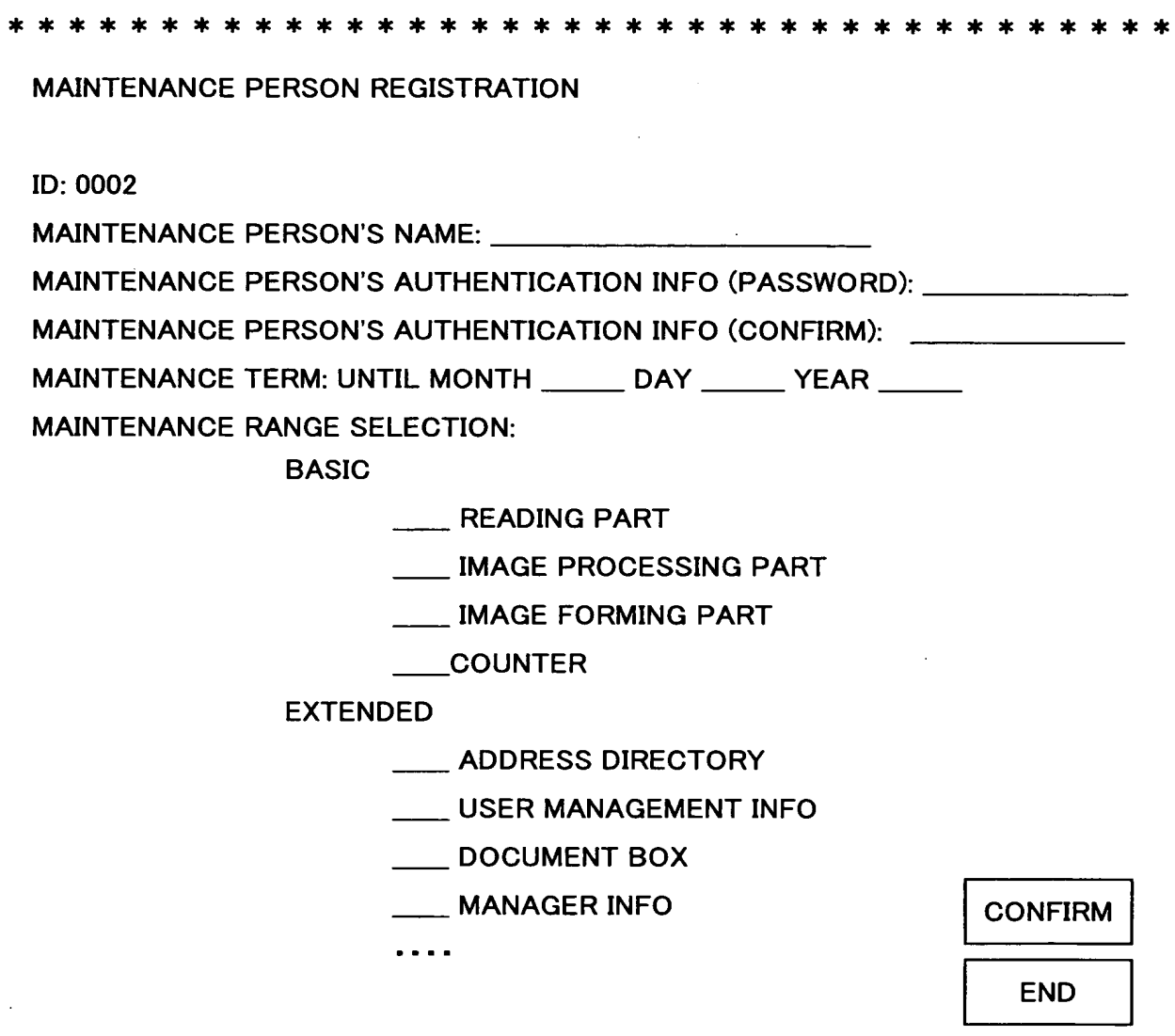

MAINTENANCE PERSON REGISTRATION
ID: 0002
MAINTENANCE PERSON'S NAME: _____
MAINTENANCE PERSON'S AUTHENTICATION INFO (PASSWORD): _____
MAINTENANCE PERSON'S AUTHENTICATION INFO (CONFIRM): _____
MAINTENANCE TERM: UNTIL MONTH _____ DAY _____ YEAR _____
MAINTENANCE RANGE SELECTION:
BASIC
____ READING PART
____ IMAGE PROCESSING PART
____ IMAGE FORMING PART
____COUNTER
EXTENDED
____ ADDRESS DIRECTORY
____ USER MANAGEMENT INFO
____ DOCUMENT BOX
____ MANAGER INFO
....
CONFIRM
END

FIG.13

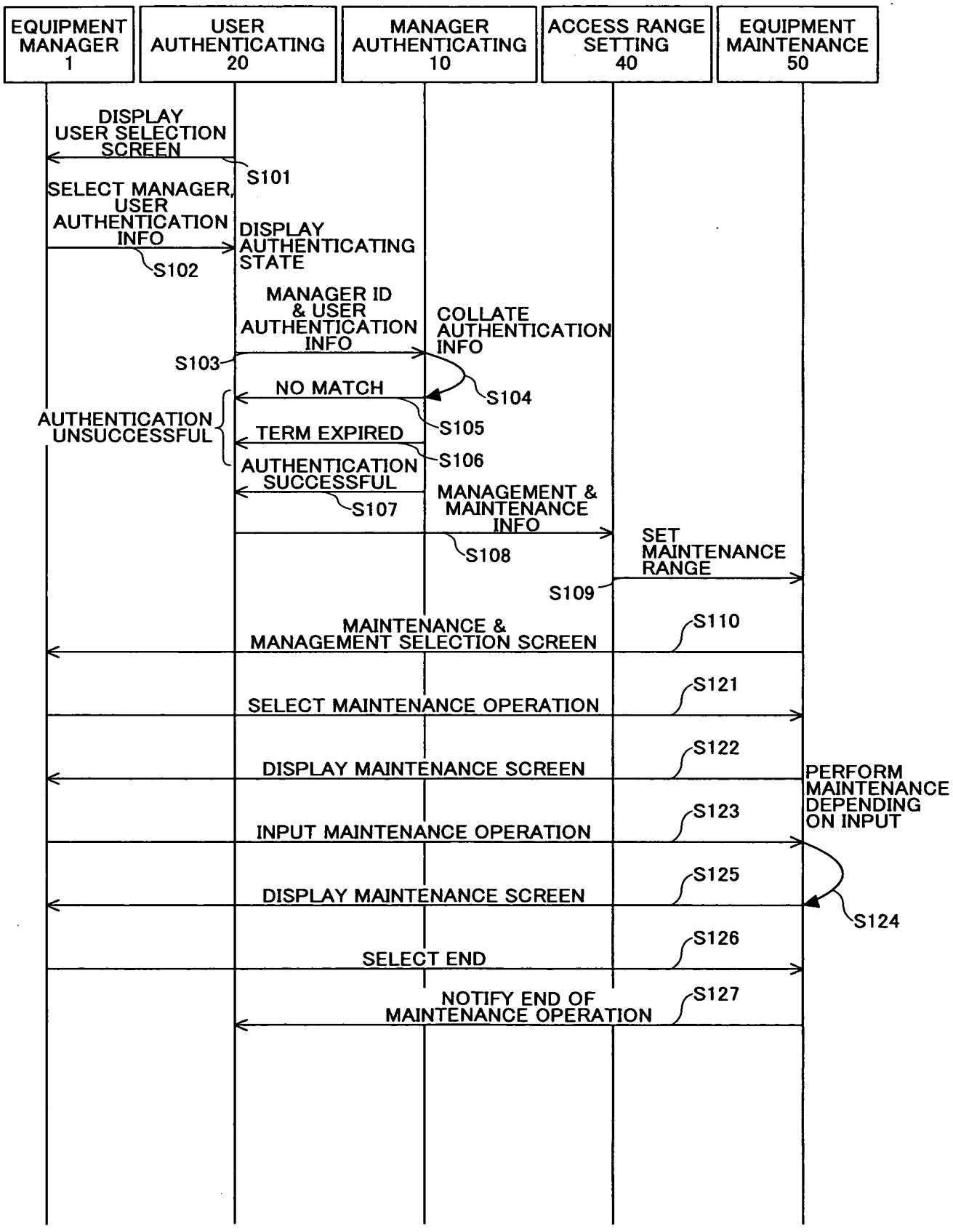

EQUIPMENT MANAGER 1
USER AUTHENTICATING 20
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S101
SELECT MANAGER, USER AUTHENTICATION INFO
S102
DISPLAY AUTHENTICATING STATE
MANAGER ID & USER AUTHENTICATION INFO
S103
COLLATE AUTHENTICATION INFO
S104
NO MATCH
S105
AUTHENTICATION UNSUCCESSFUL
TERM EXPIRED
S106
AUTHENTICATION SUCCESSFUL
S107
MANAGEMENT & MAINTENANCE INFO
S108
SET MAINTENANCE RANGE
S109
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S110
SELECT MAINTENANCE OPERATION
S121
DISPLAY MAINTENANCE SCREEN
S122
PERFORM MAINTENANCE DEPENDING ON INPUT
INPUT MAINTENANCE OPERATION
S123
DISPLAY MAINTENANCE SCREEN
S125
S124
SELECT END
S126
NOTIFY END OF MAINTENANCE OPERATION
S127

FIG.14

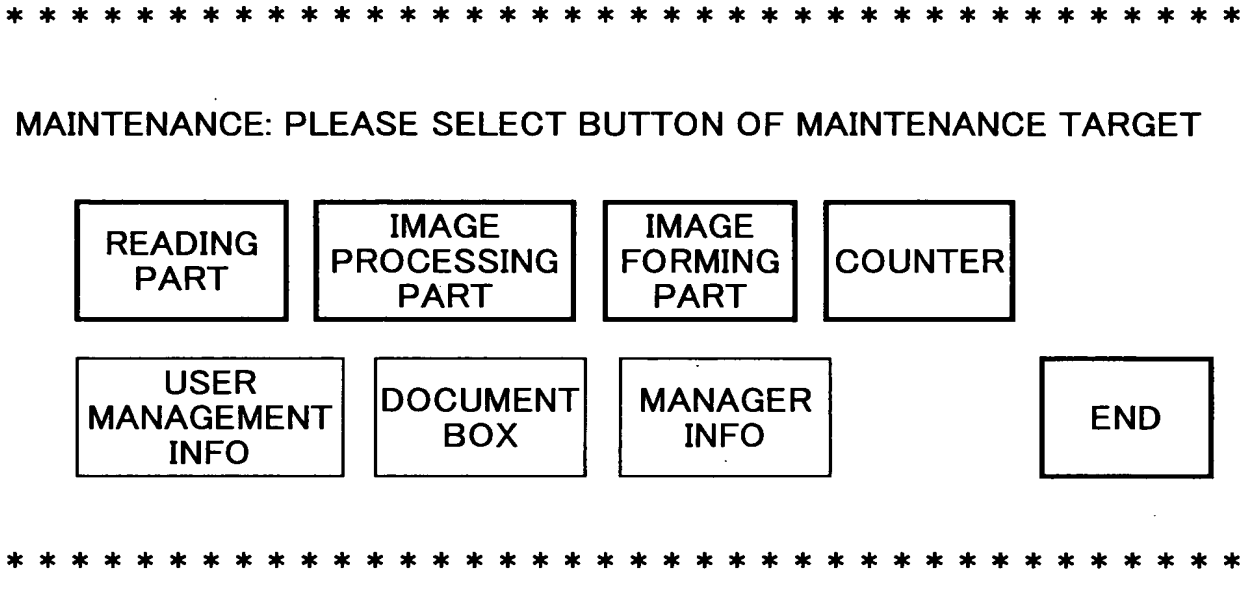

MAINTENANCE: PLEASE SELECT BUTTON OF MAINTENANCE TARGET
READING PART
IMAGE PROCESSING PART
IMAGE FORMING PART
COUNTER
USER MANAGEMENT INFO
DOCUMENT BOX
MANAGER INFO
END

FIG.15

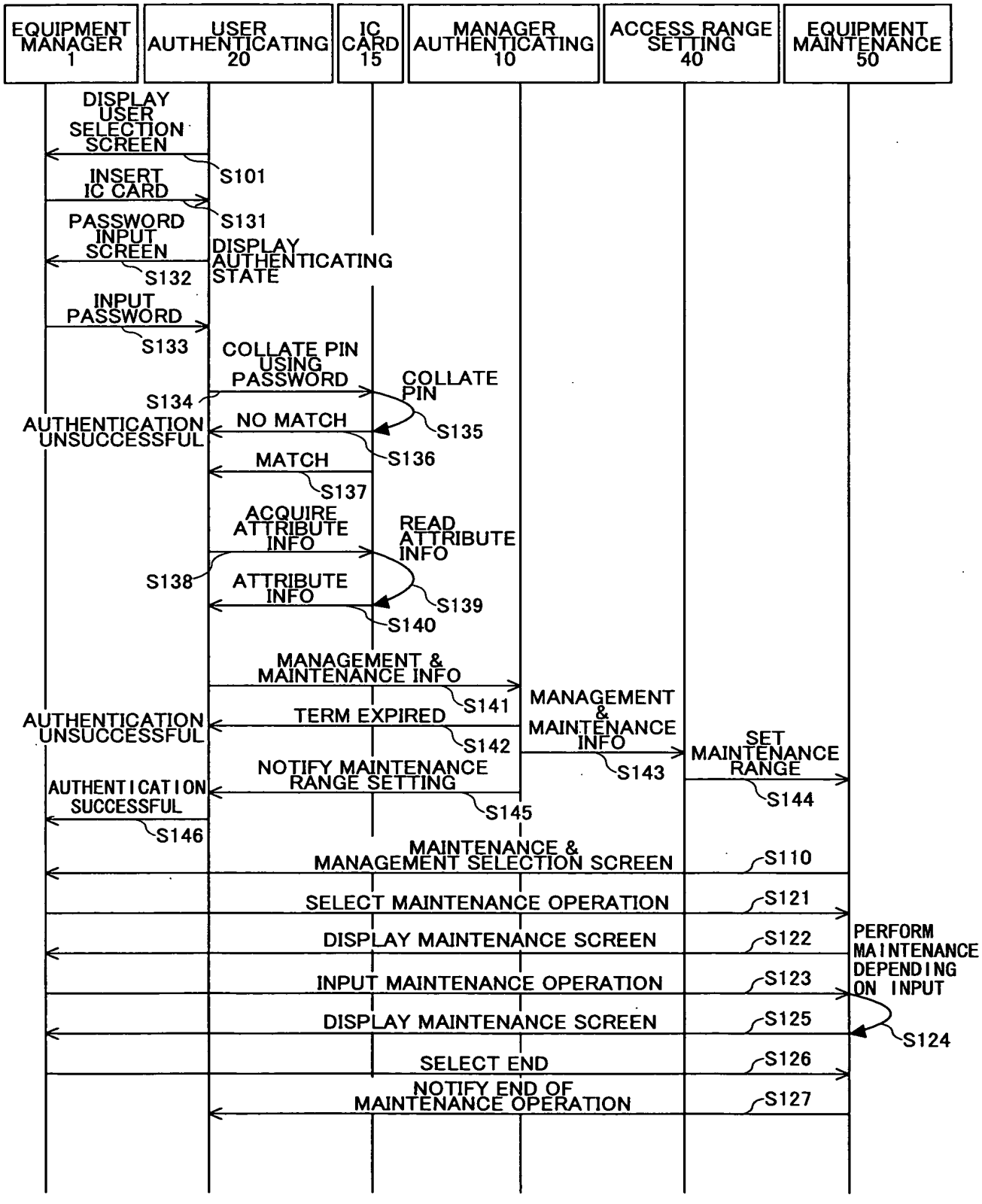

EQUIPMENT MANAGER 1
USER AUTHENTICATING 20
IC CARD 15
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S101
INSERT IC CARD
S131
PASSWORD INPUT SCREEN
S132
DISPLAY AUTHENTICATING STATE
INPUT PASSWORD
S133
COLLATE PIN USING PASSWORD
S134
COLLATE PIN
S135
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S136
MATCH
S137
ACQUIRE ATTRIBUTE INFO
S138
READ ATTRIBUTE INFO
S139
ATTRIBUTE INFO
S140
MANAGEMENT & MAINTENANCE INFO
S141
AUTHENTICATION UNSUCCESSFUL
TERM EXPIRED
S142
MANAGEMENT & MAINTENANCE INFO
S143
SET MAINTENANCE RANGE
S144
NOTIFY MAINTENANCE RANGE SETTING
S145
AUTHENTICATION SUCCESSFUL
S146
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S110
SELECT MAINTENANCE OPERATION
S121
DISPLAY MAINTENANCE SCREEN
S122
PERFORM MAINTENANCE DEPENDING ON INPUT
S124
INPUT MAINTENANCE OPERATION
S123
DISPLAY MAINTENANCE SCREEN
S125
SELECT END
S126
NOTIFY END OF MAINTENANCE OPERATION
S127

FIG.16

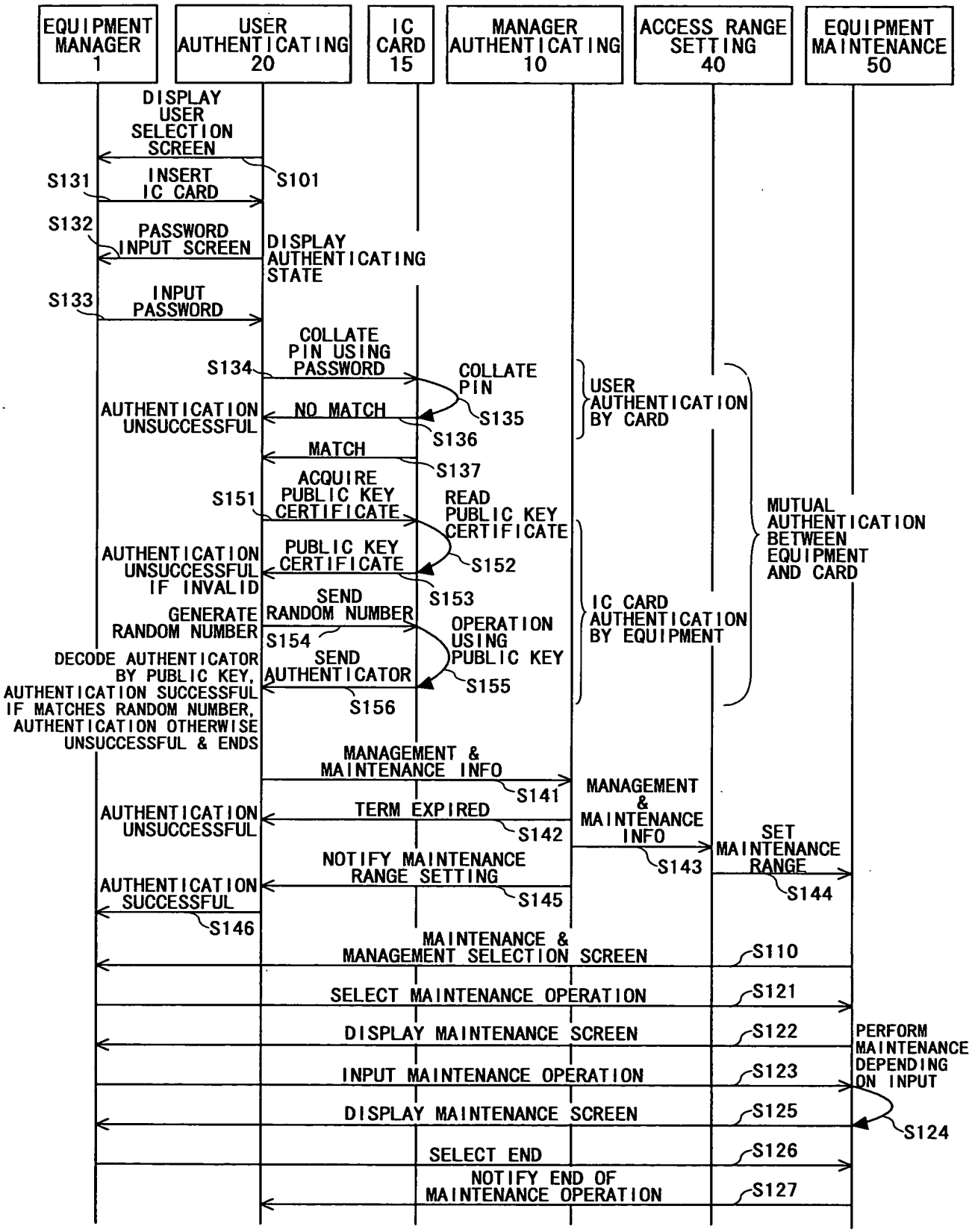

EQUIPMENT MANAGER 1
USER AUTHENTICATING 20
IC CARD 15
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S101
S131 INSERT IC CARD
S132 PASSWORD INPUT SCREEN
DISPLAY AUTHENTICATING STATE
S133 INPUT PASSWORD
COLLATE PIN USING PASSWORD
S134
COLLATE PIN
S135
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S136
MATCH
S137
USER AUTHENTICATION BY CARD
S151 ACQUIRE PUBLIC KEY CERTIFICATE
READ PUBLIC KEY CERTIFICATE
S152
AUTHENTICATION UNSUCCESSFUL IF INVALID
PUBLIC KEY CERTIFICATE
S153
MUTUAL AUTHENTICATION BETWEEN EQUIPMENT AND CARD
GENERATE RANDOM NUMBER
SEND RANDOM NUMBER
S154
OPERATION USING PUBLIC KEY
S155
DECODE AUTHENTICATOR BY PUBLIC KEY, AUTHENTICATION SUCCESSFUL IF MATCHES RANDOM NUMBER, AUTHENTICATION OTHERWISE UNSUCCESSFUL & ENDS
SEND AUTHENTICATOR
S156
IC CARD AUTHENTICATION BY EQUIPMENT
MANAGEMENT & MAINTENANCE INFO
S141
MANAGEMENT & MAINTENANCE INFO
AUTHENTICATION UNSUCCESSFUL
TERM EXPIRED
S142
SET MAINTENANCE RANGE
S143
S144
NOTIFY MAINTENANCE RANGE SETTING
S145
AUTHENTICATION SUCCESSFUL
S146
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S110
SELECT MAINTENANCE OPERATION
S121
DISPLAY MAINTENANCE SCREEN
S122
PERFORM MAINTENANCE DEPENDING ON INPUT
INPUT MAINTENANCE OPERATION
S123
DISPLAY MAINTENANCE SCREEN
S125
S124
SELECT END
S126
NOTIFY END OF MAINTENANCE OPERATION
S127

FIG.17

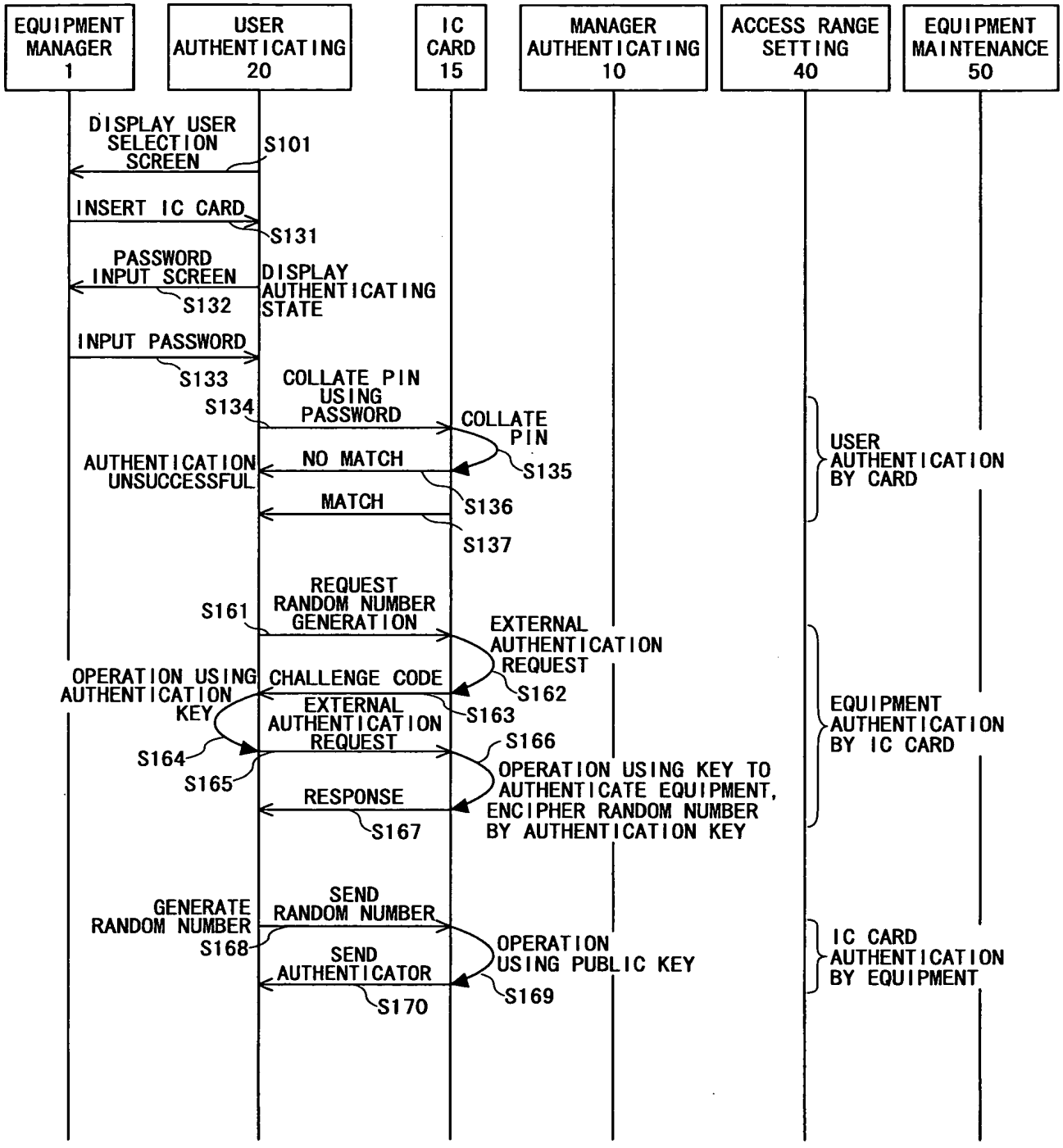

EQUIPMENT MANAGER 1
USER AUTHENTICATING 20
IC CARD 15
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S101
INSERT IC CARD
S131
PASSWORD INPUT SCREEN
S132
DISPLAY AUTHENTICATING STATE
INPUT PASSWORD
S133
COLLATE PIN USING PASSWORD
S134
COLLATE PIN
S135
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S136
MATCH
S137
USER AUTHENTICATION BY CARD
REQUEST RANDOM NUMBER GENERATION
S161
EXTERNAL AUTHENTICATION REQUEST
S162
OPERATION USING AUTHENTICATION KEY
CHALLENGE CODE
S163
EXTERNAL AUTHENTICATION REQUEST
S164
S165
S166
OPERATION USING KEY TO AUTHENTICATE EQUIPMENT, ENCIPHER RANDOM NUMBER BY AUTHENTICATION KEY
RESPONSE
S167
EQUIPMENT AUTHENTICATION BY IC CARD
GENERATE RANDOM NUMBER
S168
SEND RANDOM NUMBER
OPERATION USING PUBLIC KEY
S169
SEND AUTHENTICATOR
S170
IC CARD AUTHENTICATION BY EQUIPMENT

FIG.18

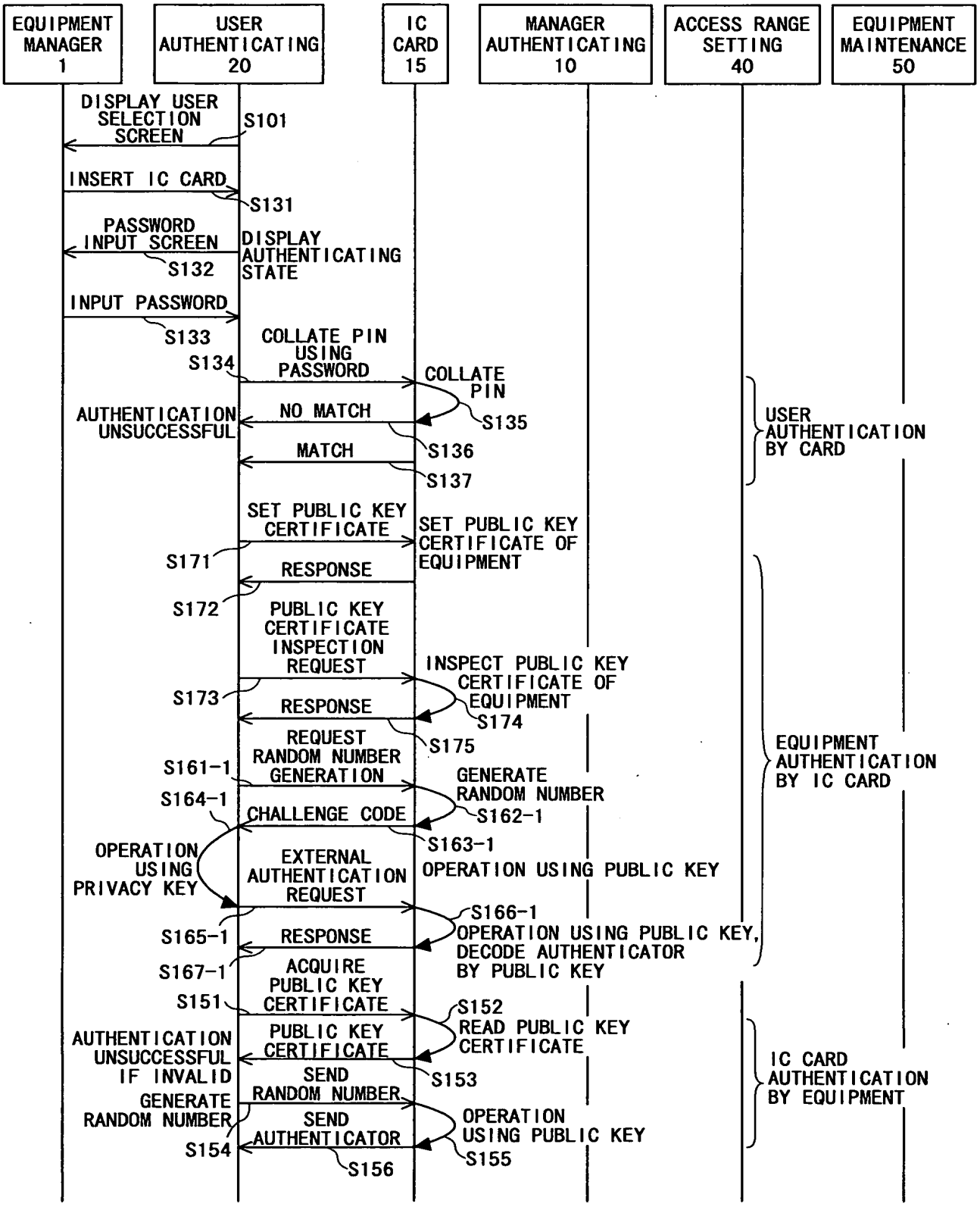

EQUIPMENT MANAGER 1
USER AUTHENTICATING 20
IC CARD 15
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S101
INSERT IC CARD
S131
PASSWORD INPUT SCREEN
S132
DISPLAY AUTHENTICATING STATE
INPUT PASSWORD
S133
COLLATE PIN USING PASSWORD
S134
COLLATE PIN
S135
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S136
MATCH
S137
USER AUTHENTICATION BY CARD
SET PUBLIC KEY CERTIFICATE
S171
SET PUBLIC KEY CERTIFICATE OF EQUIPMENT
RESPONSE
S172
PUBLIC KEY CERTIFICATE INSPECTION REQUEST
S173
INSPECT PUBLIC KEY CERTIFICATE OF EQUIPMENT
S174
RESPONSE
S175
EQUIPMENT AUTHENTICATION BY IC CARD
REQUEST RANDOM NUMBER GENERATION
S161-1
GENERATE RANDOM NUMBER
S162-1
S164-1
CHALLENGE CODE
S163-1
OPERATION USING PRIVACY KEY
EXTERNAL AUTHENTICATION REQUEST
OPERATION USING PUBLIC KEY
S166-1
S165-1
RESPONSE
OPERATION USING PUBLIC KEY, DECODE AUTHENTICATOR BY PUBLIC KEY
S167-1
ACQUIRE PUBLIC KEY CERTIFICATE
S151
S152
READ PUBLIC KEY CERTIFICATE
AUTHENTICATION UNSUCCESSFUL IF INVALID
PUBLIC KEY CERTIFICATE
S153
IC CARD AUTHENTICATION BY EQUIPMENT
SEND RANDOM NUMBER
GENERATE RANDOM NUMBER
SEND AUTHENTICATOR
OPERATION USING PUBLIC KEY
S154
S155
S156

FIG.19

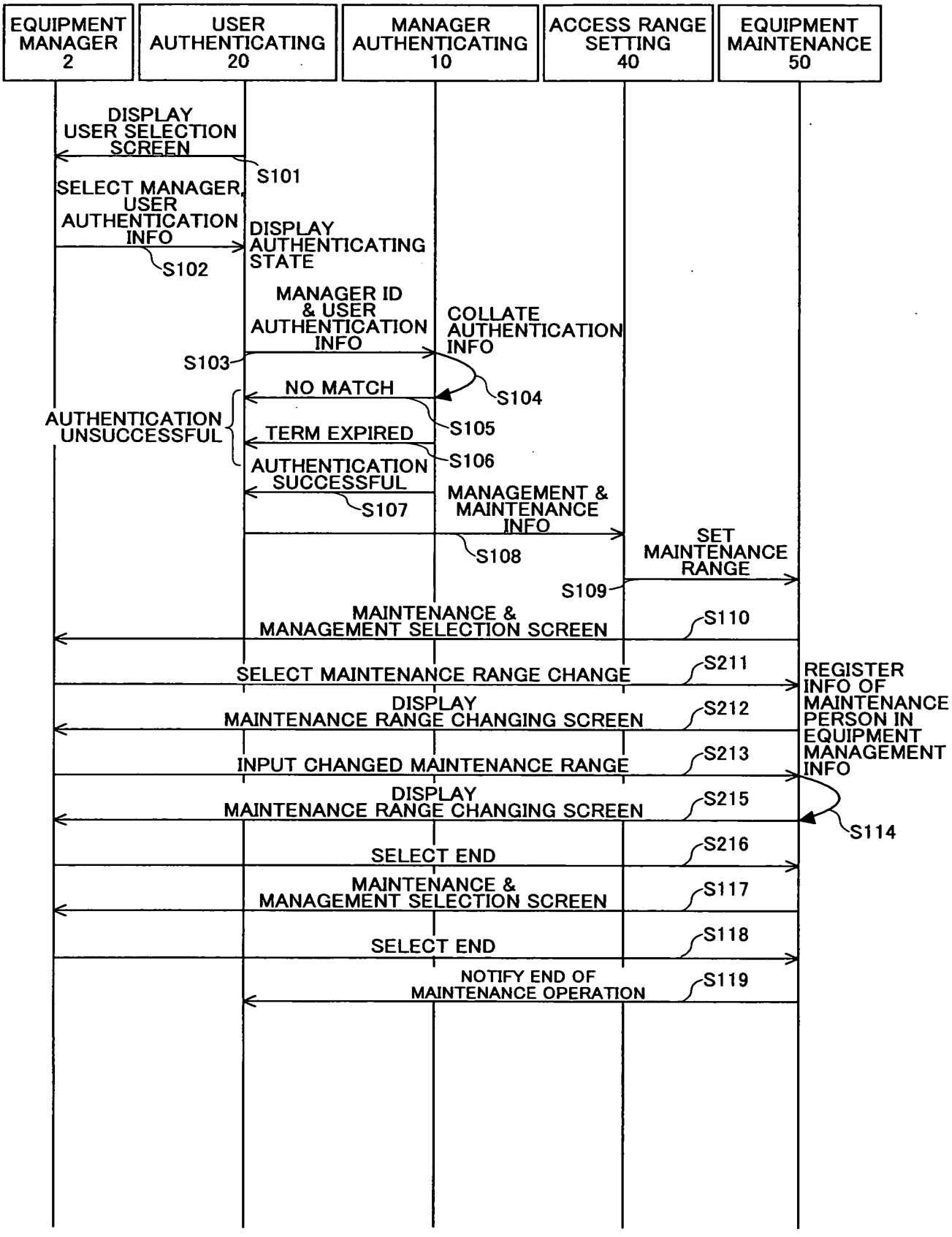

EQUIPMENT MANAGER 2
USER AUTHENTICATING 20
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S101
SELECT MANAGER, USER AUTHENTICATION INFO
S102
DISPLAY AUTHENTICATING STATE
MANAGER ID & USER AUTHENTICATION INFO
S103
COLLATE AUTHENTICATION INFO
S104
NO MATCH
S105
AUTHENTICATION UNSUCCESSFUL
TERM EXPIRED
S106
AUTHENTICATION SUCCESSFUL
S107
MANAGEMENT & MAINTENANCE INFO
S108
SET MAINTENANCE RANGE
S109
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S110
SELECT MAINTENANCE RANGE CHANGE
S211
REGISTER INFO OF MAINTENANCE PERSON IN EQUIPMENT MANAGEMENT INFO
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S212
INPUT CHANGED MAINTENANCE RANGE
S213
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S215
S114
SELECT END
S216
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S117
SELECT END
S118
NOTIFY END OF MAINTENANCE OPERATION
S119

FIG.20

* *

MAINTENANCE RANGE ADDING

ID: 0002, NAME: _____

MAINTENANCE TERM: UNTIL MONTH 02 DAY 29 YEAR 2004

CHANGED MAINTENANCE TERM: UNTIL MONTH _____ DAY _____ YEAR _____

MAINTENANCE RANGE SELECTION:

BASIC	PRESENT SETTING	CHANGE
READING PART	O	_____
IMAGE PROCESSING PART	O	_____
IMAGE FORMING PART	O	_____
COUNTER	O	_____
EXTENDED		
ADDRESS DIRECTORY	×	_____
USER MANAGEMENT INFO	×	_____
DOCUMENT BOX	×	_____
MANAGER INFO	×	_____

VALID TERM OF ADDED RANGE: UNTIL MONTH _____ DAY _____ YEAR _____

CONFIRM

END

* *

FIG.21

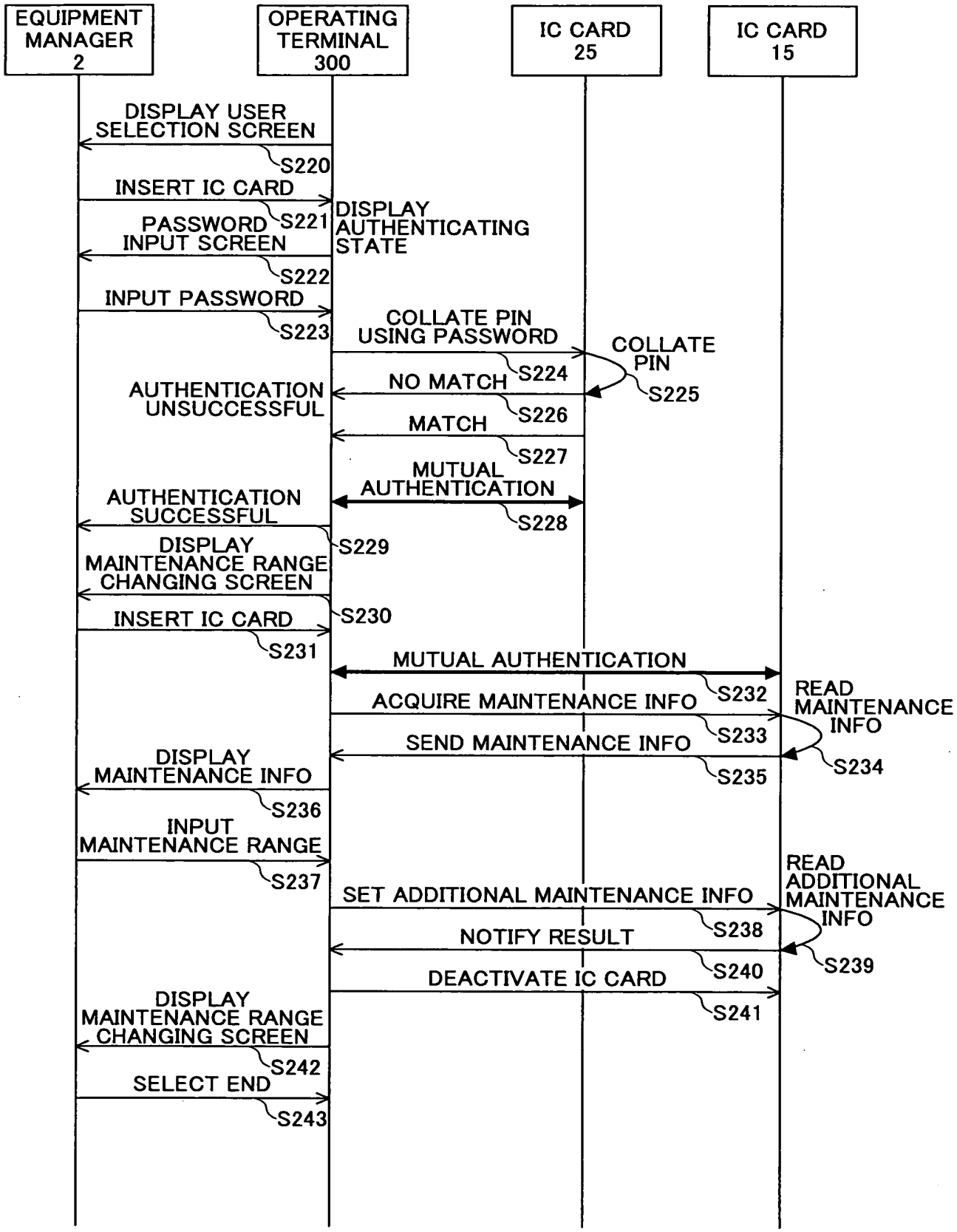

EQUIPMENT MANAGER 2
OPERATING TERMINAL 300
IC CARD 25
IC CARD 15
DISPLAY USER SELECTION SCREEN
S220
INSERT IC CARD
S221
DISPLAY AUTHENTICATING STATE
PASSWORD INPUT SCREEN
S222
INPUT PASSWORD
S223
COLLATE PIN USING PASSWORD
S224
COLLATE PIN
S225
NO MATCH
S226
AUTHENTICATION UNSUCCESSFUL
MATCH
S227
MUTUAL AUTHENTICATION
S228
AUTHENTICATION SUCCESSFUL
S229
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S230
INSERT IC CARD
S231
MUTUAL AUTHENTICATION
S232
ACQUIRE MAINTENANCE INFO
S233
READ MAINTENANCE INFO
S234
SEND MAINTENANCE INFO
S235
DISPLAY MAINTENANCE INFO
S236
INPUT MAINTENANCE RANGE
S237
SET ADDITIONAL MAINTENANCE INFO
S238
READ ADDITIONAL MAINTENANCE INFO
S239
NOTIFY RESULT
S240
DEACTIVATE IC CARD
S241
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S242
SELECT END
S243

FIG.22

* *

MAINTENANCE RANGE ADDING

ID: 0002, NAME: _____

MAINTENANCE TARGET EQUIPMENT: Model NX-2000
SERIAL NO.: 12345678

SETUP SITE: COMPANY AA, BRANCH BB, ROOM XXX

CHANGED MAINTENANCE TERM: UNTIL MONTH _____ DAY _____ YEAR _____

MAINTENANCE RANGE SELECTION:

BASIC	PRESENT SETTING	CHANGE
READING PART	O	_____
IMAGE PROCESSING PART	O	_____
IMAGE FORMING PART	O	_____
COUNTER	O	_____
EXTENDED		
ADDRESS DIRECTORY	×	_____
USER MANAGEMENT INFO	×	_____
DOCUMENT BOX	×	_____
MANAGER INFO	×	_____

VALID TERM OF ADDED RANGE: UNTIL MONTH _____ DAY _____ YEAR _____

CONFIRM

END

* *

FIG.23

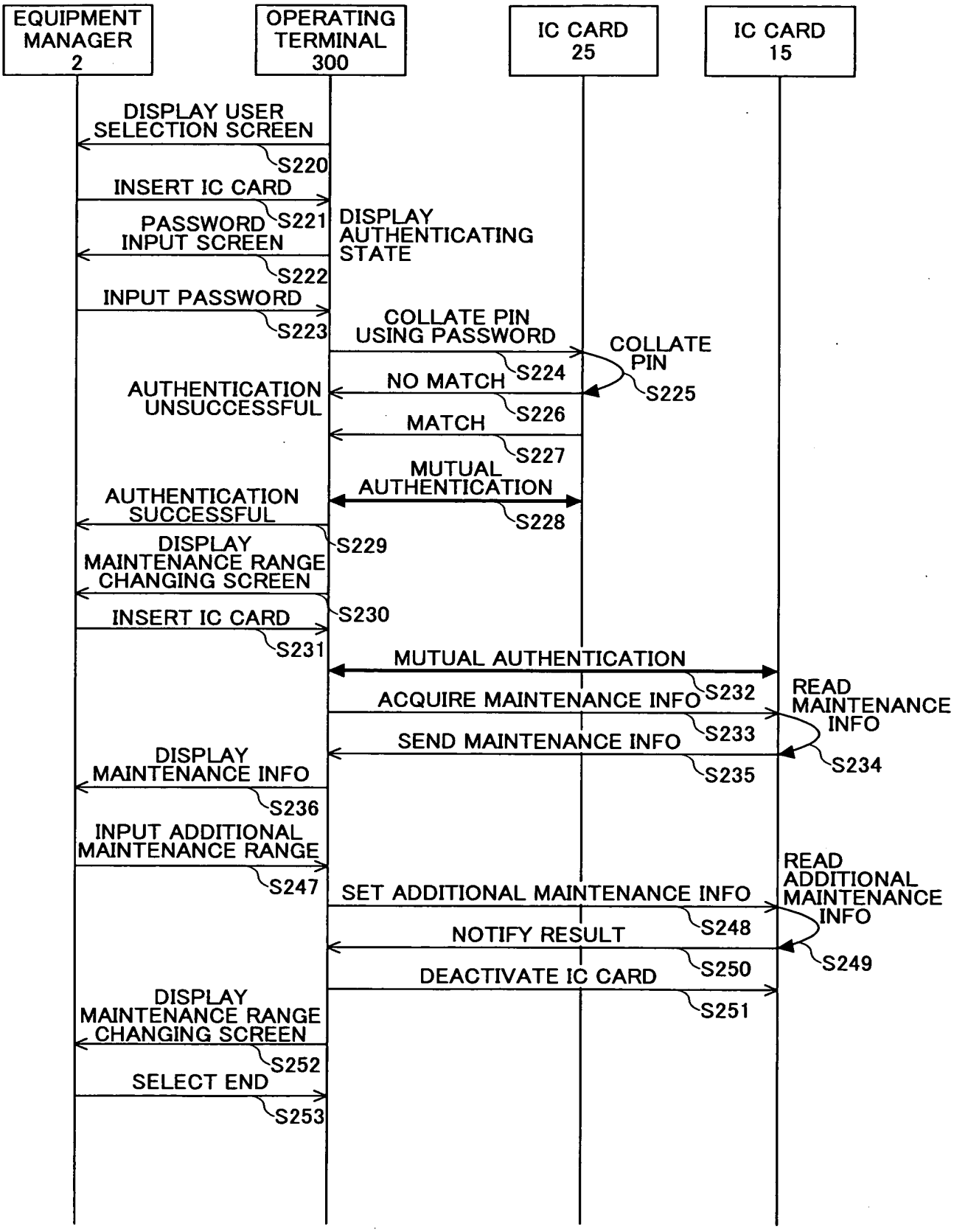

EQUIPMENT MANAGER 2
OPERATING TERMINAL 300
IC CARD 25
IC CARD 15
DISPLAY USER SELECTION SCREEN
S220
INSERT IC CARD
S221
PASSWORD INPUT SCREEN
DISPLAY AUTHENTICATING STATE
S222
INPUT PASSWORD
S223
COLLATE PIN USING PASSWORD
S224
COLLATE PIN
S225
NO MATCH
S226
AUTHENTICATION UNSUCCESSFUL
MATCH
S227
MUTUAL AUTHENTICATION
S228
AUTHENTICATION SUCCESSFUL
S229
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S230
INSERT IC CARD
S231
MUTUAL AUTHENTICATION
S232
ACQUIRE MAINTENANCE INFO
S233
READ MAINTENANCE INFO
S234
SEND MAINTENANCE INFO
S235
DISPLAY MAINTENANCE INFO
S236
INPUT ADDITIONAL MAINTENANCE RANGE
S247
SET ADDITIONAL MAINTENANCE INFO
S248
READ ADDITIONAL MAINTENANCE INFO
S249
NOTIFY RESULT
S250
DEACTIVATE IC CARD
S251
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S252
SELECT END
S253

FIG.24

* *

MAINTENANCE RANGE ADDING

ID: 0002, NAME: _____

MAINTENANCE TARGET EQUIPMENT: Model NX-2000
SERIAL NO.: 12345678

SETUP SITE: COMPANY AA, BRANCH BB, ROOM XXX

CHANGED MAINTENANCE TERM: UNTIL MONTH 02 DAY 29 YEAR 2004

MAINTENANCE RANGE SELECTION:

BASIC	PRESENT SETTING	ADD
READING PART	O	
IMAGE PROCESSING PART	O	
IMAGE FORMING PART	O	
COUNTER	O	
EXTENDED		
ADDRESS DIRECTORY	×	_____
USER MANAGEMENT INFO	×	_____
DOCUMENT BOX	×	_____
MANAGER INFO	×	_____

VALID TERM OF ADDED RANGE: UNTIL MONTH _____ DAY _____ YEAR _____
OR FOR _____ DAYS FROM TODAY

CONFIRM

END

* *

FIG.25

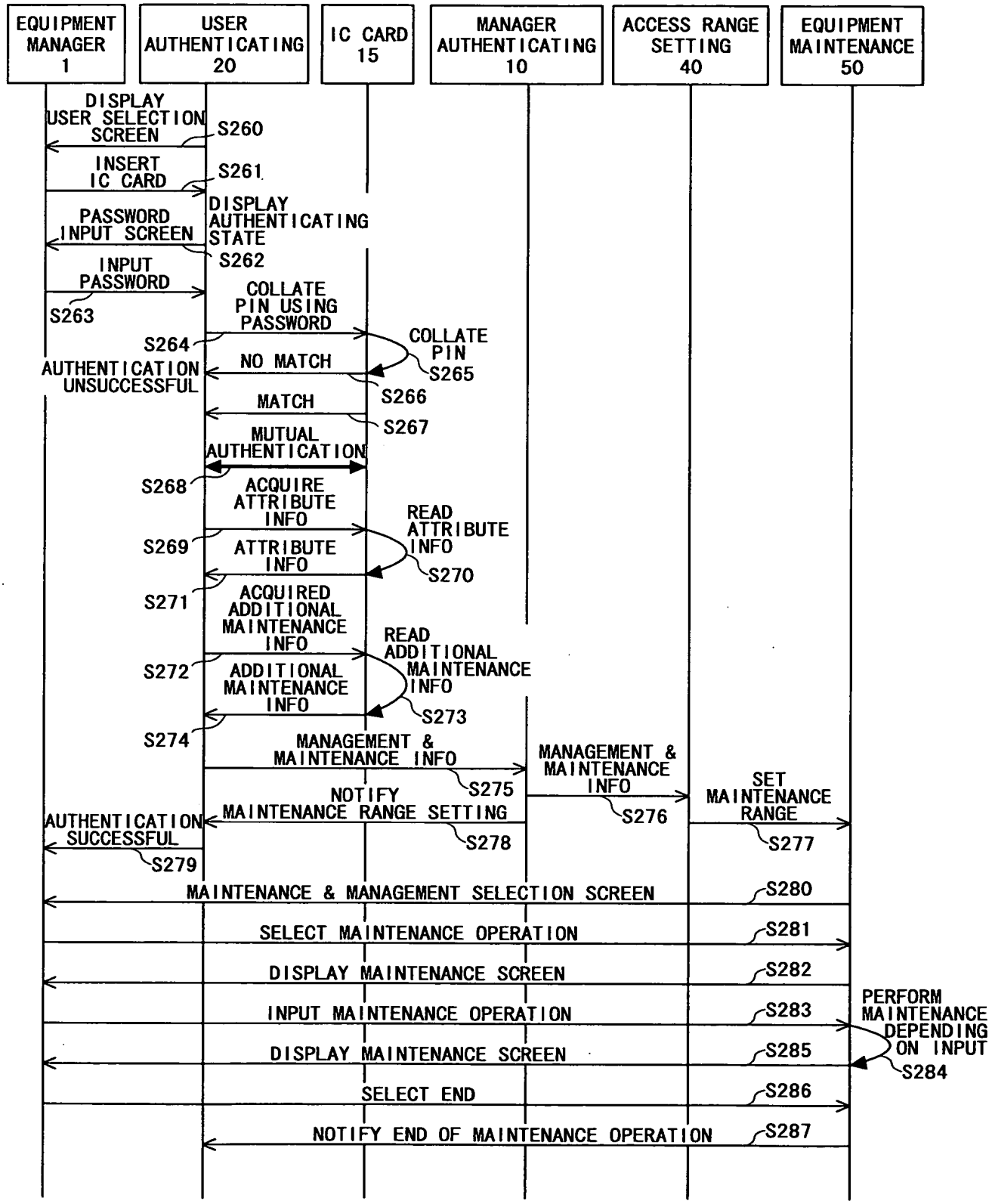

EQUIPMENT MANAGER 1
USER AUTHENTICATING 20
IC CARD 15
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
DISPLAY USER SELECTION SCREEN
S260
INSERT IC CARD
S261
DISPLAY AUTHENTICATING STATE
PASSWORD INPUT SCREEN
S262
INPUT PASSWORD
S263
COLLATE PIN USING PASSWORD
S264
COLLATE PIN
S265
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S266
MATCH
S267
MUTUAL AUTHENTICATION
S268
ACQUIRE ATTRIBUTE INFO
READ ATTRIBUTE INFO
S269
ATTRIBUTE INFO
S270
S271
ACQUIRED ADDITIONAL MAINTENANCE INFO
READ ADDITIONAL MAINTENANCE INFO
S272
ADDITIONAL MAINTENANCE INFO
S273
S274
MANAGEMENT & MAINTENANCE INFO
S275
MANAGEMENT & MAINTENANCE INFO
S276
SET MAINTENANCE RANGE
S277
NOTIFY MAINTENANCE RANGE SETTING
S278
AUTHENTICATION SUCCESSFUL
S279
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S280
SELECT MAINTENANCE OPERATION
S281
DISPLAY MAINTENANCE SCREEN
S282
INPUT MAINTENANCE OPERATION
S283
PERFORM MAINTENANCE DEPENDING ON INPUT
S284
DISPLAY MAINTENANCE SCREEN
S285
SELECT END
S286
NOTIFY END OF MAINTENANCE OPERATION
S287

FIG.26

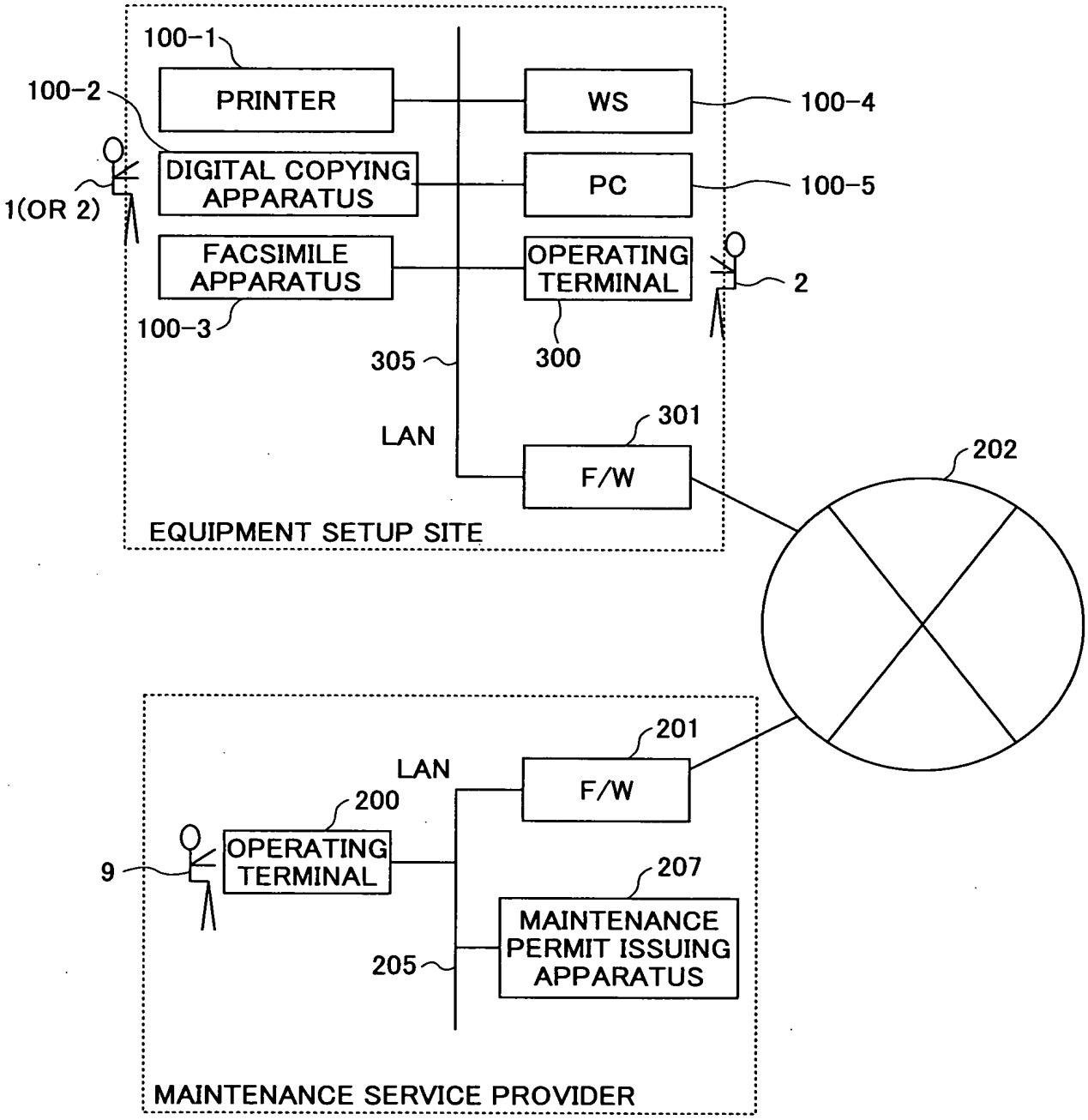

100-1
PRINTER
100-2
DIGITAL COPYING APPARATUS
1(OR 2)
FACSIMILE APPARATUS
100-3
WS
100-4
PC
100-5
OPERATING TERMINAL
2
300
305
LAN
301
F/W
EQUIPMENT SETUP SITE
202
201
LAN
F/W
200
OPERATING TERMINAL
9
207
MAINTENANCE PERMIT ISSUING APPARATUS
205
MAINTENANCE SERVICE PROVIDER

FIG.27

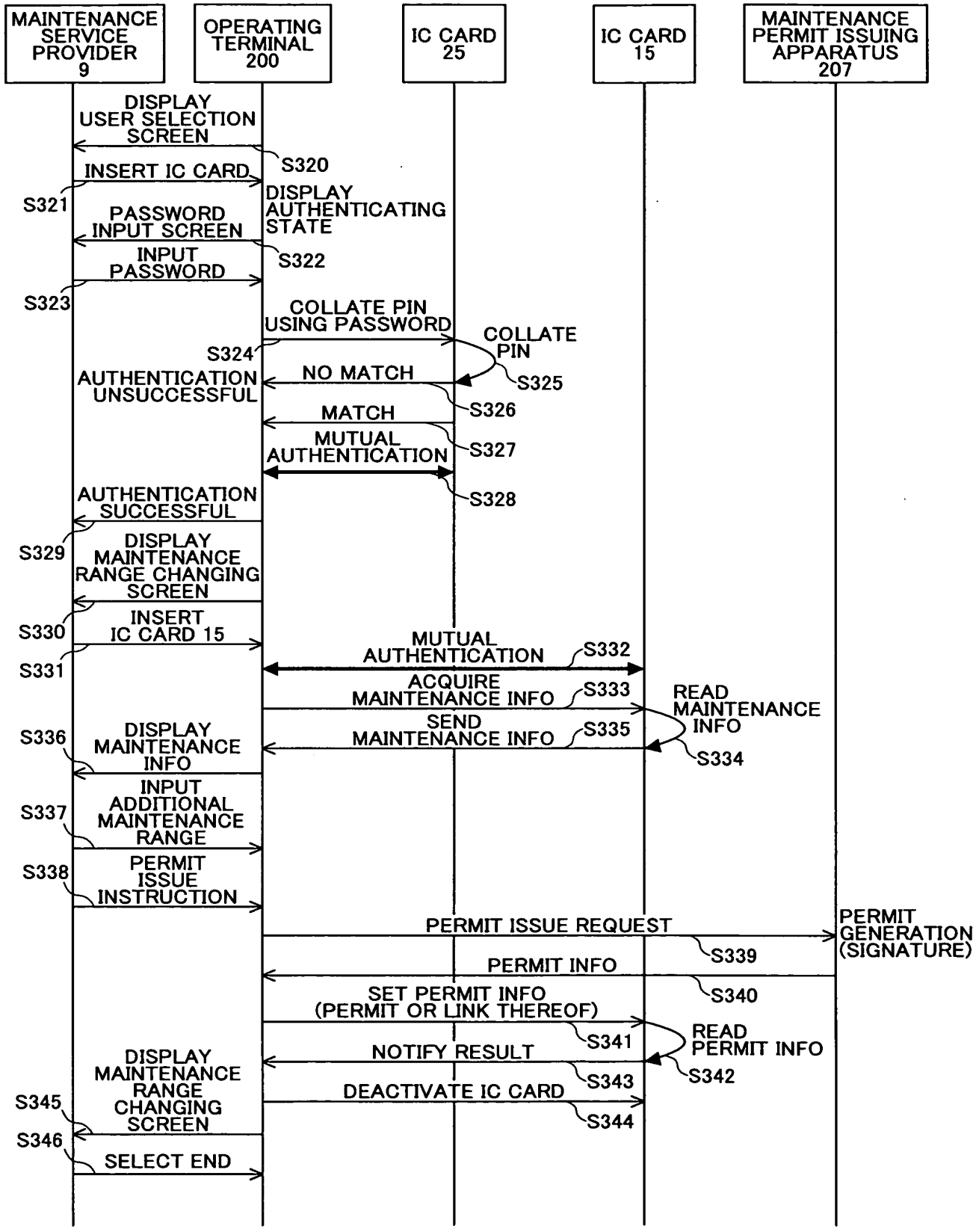

MAINTENANCE SERVICE PROVIDER 9
OPERATING TERMINAL 200
IC CARD 25
IC CARD 15
MAINTENANCE PERMIT ISSUING APPARATUS 207
DISPLAY USER SELECTION SCREEN
S320
INSERT IC CARD
S321
DISPLAY AUTHENTICATING STATE
PASSWORD INPUT SCREEN
S322
INPUT PASSWORD
S323
COLLATE PIN USING PASSWORD
S324
COLLATE PIN
S325
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S326
MATCH
S327
MUTUAL AUTHENTICATION
S328
AUTHENTICATION SUCCESSFUL
S329
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S330
INSERT IC CARD 15
S331
MUTUAL AUTHENTICATION
S332
ACQUIRE MAINTENANCE INFO
S333
READ MAINTENANCE INFO
S334
SEND MAINTENANCE INFO
S335
S336
DISPLAY MAINTENANCE INFO
S337
INPUT ADDITIONAL MAINTENANCE RANGE
S338
PERMIT ISSUE INSTRUCTION
PERMIT ISSUE REQUEST
S339
PERMIT GENERATION (SIGNATURE)
PERMIT INFO
S340
SET PERMIT INFO (PERMIT OR LINK THEREOF)
S341
READ PERMIT INFO
S342
NOTIFY RESULT
S343
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S345
DEACTIVATE IC CARD
S344
S346
SELECT END

FIG.28

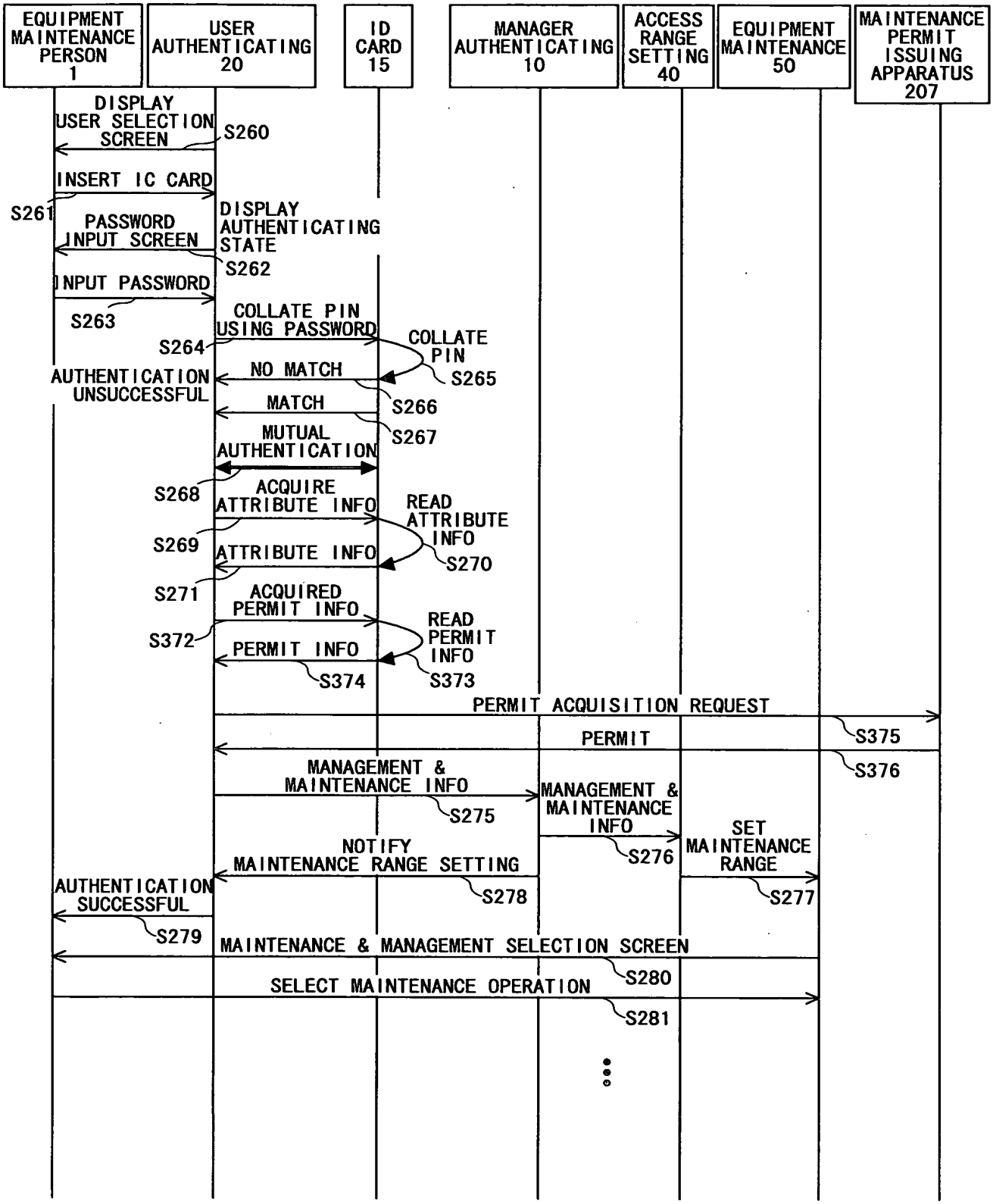

EQUIPMENT MAINTENANCE PERSON 1
USER AUTHENTICATING 20
ID CARD 15
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MAINTENANCE 50
MAINTENANCE PERMIT ISSUING APPARATUS 207
DISPLAY USER SELECTION SCREEN
S260
INSERT IC CARD
S261
DISPLAY AUTHENTICATING STATE
PASSWORD INPUT SCREEN
S262
INPUT PASSWORD
S263
COLLATE PIN USING PASSWORD
S264
COLLATE PIN
S265
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S266
MATCH
S267
MUTUAL AUTHENTICATION
S268
ACQUIRE ATTRIBUTE INFO
S269
READ ATTRIBUTE INFO
S270
ATTRIBUTE INFO
S271
ACQUIRED PERMIT INFO
S372
READ PERMIT INFO
S373
PERMIT INFO
S374
PERMIT ACQUISITION REQUEST
S375
PERMIT
S376
MANAGEMENT & MAINTENANCE INFO
S275
MANAGEMENT & MAINTENANCE INFO
S276
SET MAINTENANCE RANGE
S277
NOTIFY MAINTENANCE RANGE SETTING
S278
AUTHENTICATION SUCCESSFUL
S279
MAINTENANCE & MANAGEMENT SELECTION SCREEN
S280
SELECT MAINTENANCE OPERATION
S281

FIG.29

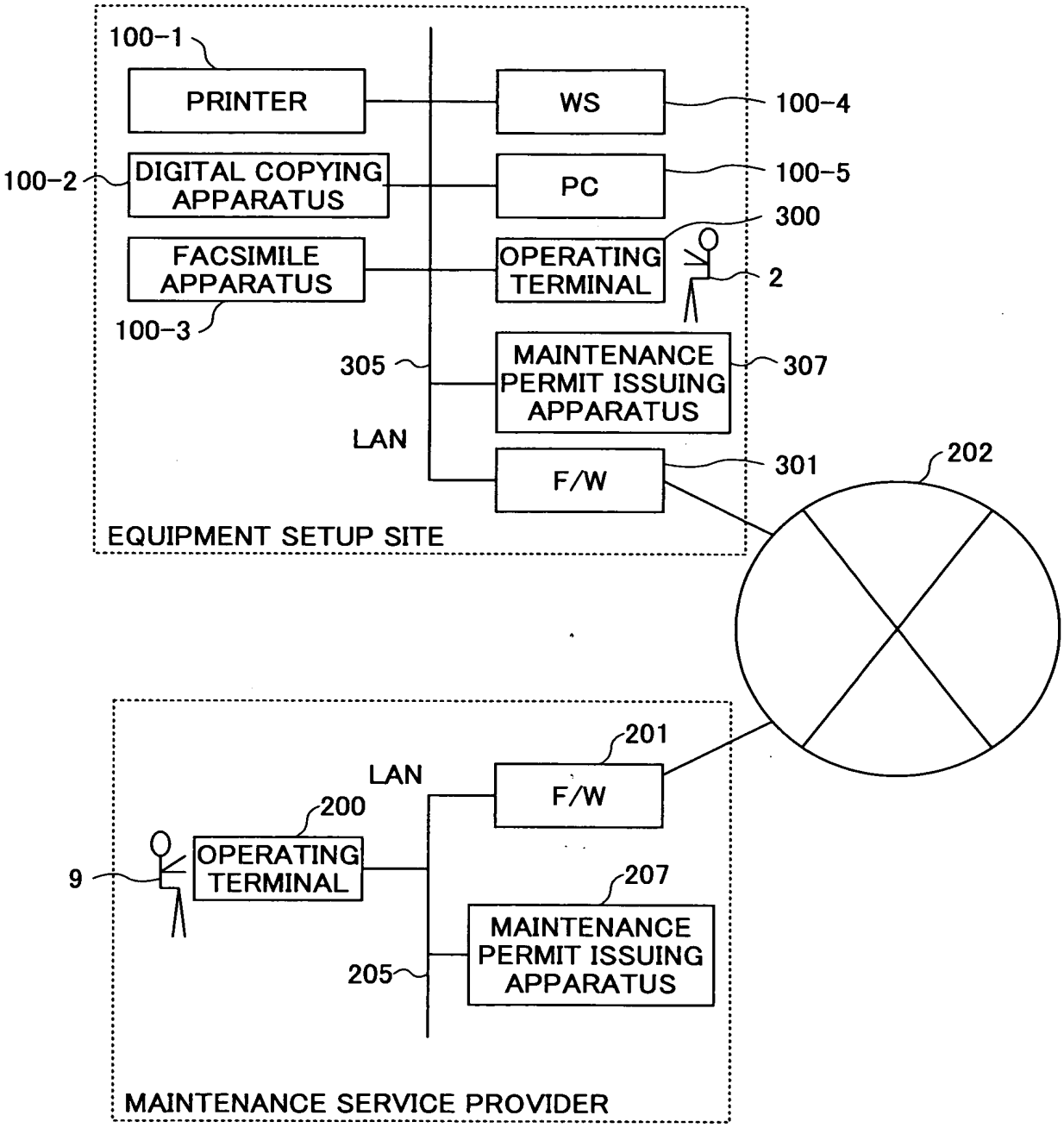

100-1
PRINTER
WS
100-4
100-2
DIGITAL COPYING APPARATUS
PC
100-5
300
FACSIMILE APPARATUS
OPERATING TERMINAL
2
100-3
305
MAINTENANCE PERMIT ISSUING APPARATUS
307
LAN
F/W
301
202
EQUIPMENT SETUP SITE
201
LAN
F/W
200
9
OPERATING TERMINAL
207
MAINTENANCE PERMIT ISSUING APPARATUS
205
MAINTENANCE SERVICE PROVIDER

FIG.30

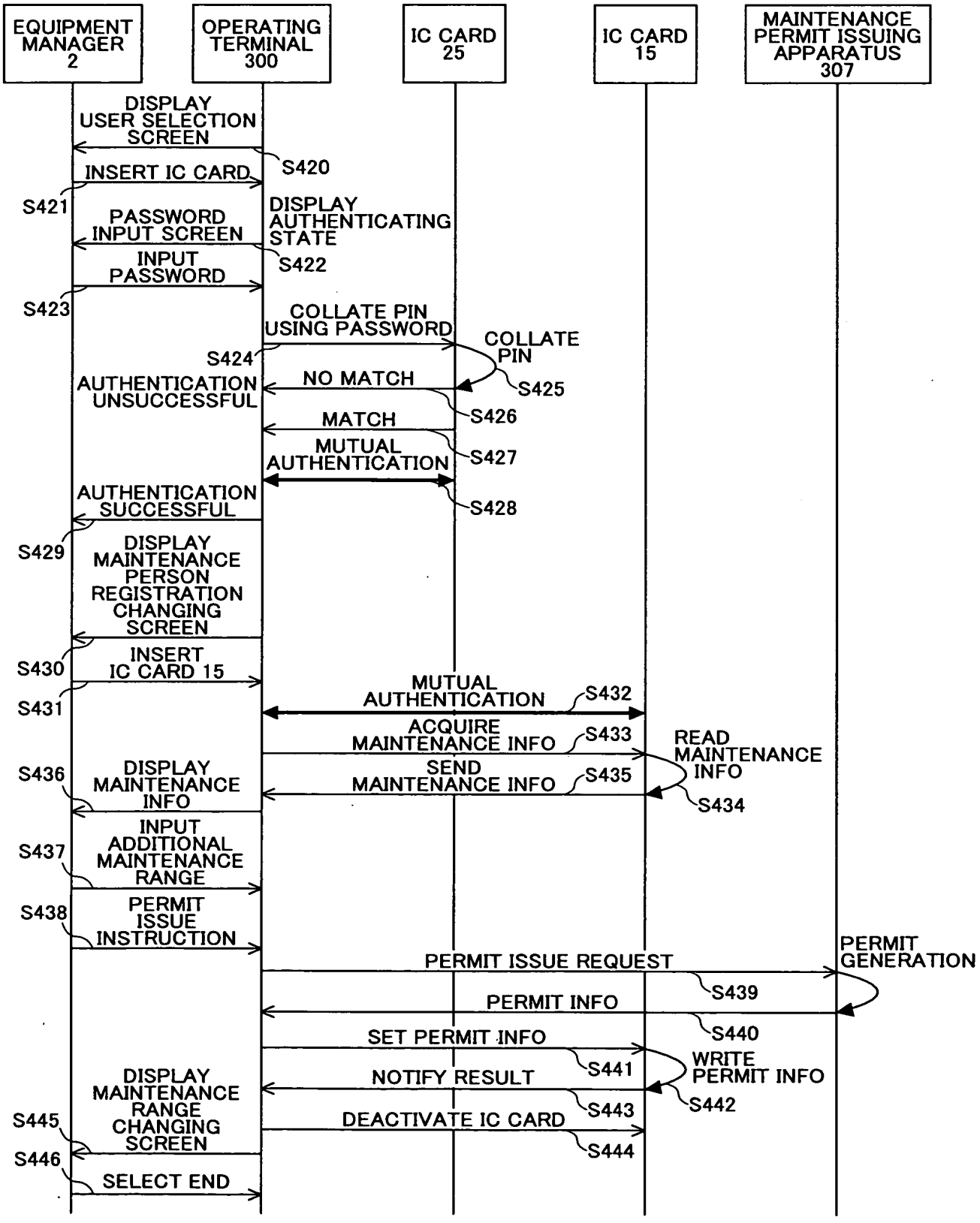

EQUIPMENT MANAGER 2
OPERATING TERMINAL 300
IC CARD 25
IC CARD 15
MAINTENANCE PERMIT ISSUING APPARATUS 307
DISPLAY USER SELECTION SCREEN
S420
INSERT IC CARD
S421
DISPLAY AUTHENTICATING STATE
PASSWORD INPUT SCREEN
S422
INPUT PASSWORD
S423
COLLATE PIN USING PASSWORD
S424
COLLATE PIN
S425
NO MATCH
AUTHENTICATION UNSUCCESSFUL
S426
MATCH
S427
MUTUAL AUTHENTICATION
S428
AUTHENTICATION SUCCESSFUL
S429
DISPLAY MAINTENANCE PERSON REGISTRATION CHANGING SCREEN
S430
INSERT IC CARD 15
S431
MUTUAL AUTHENTICATION
S432
ACQUIRE MAINTENANCE INFO
S433
READ MAINTENANCE INFO
S434
SEND MAINTENANCE INFO
S435
S436
DISPLAY MAINTENANCE INFO
S437
INPUT ADDITIONAL MAINTENANCE RANGE
S438
PERMIT ISSUE INSTRUCTION
PERMIT ISSUE REQUEST
PERMIT GENERATION
S439
PERMIT INFO
S440
SET PERMIT INFO
S441
WRITE PERMIT INFO
S442
NOTIFY RESULT
S443
DEACTIVATE IC CARD
S444
S445
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S446
SELECT END

FIG.31

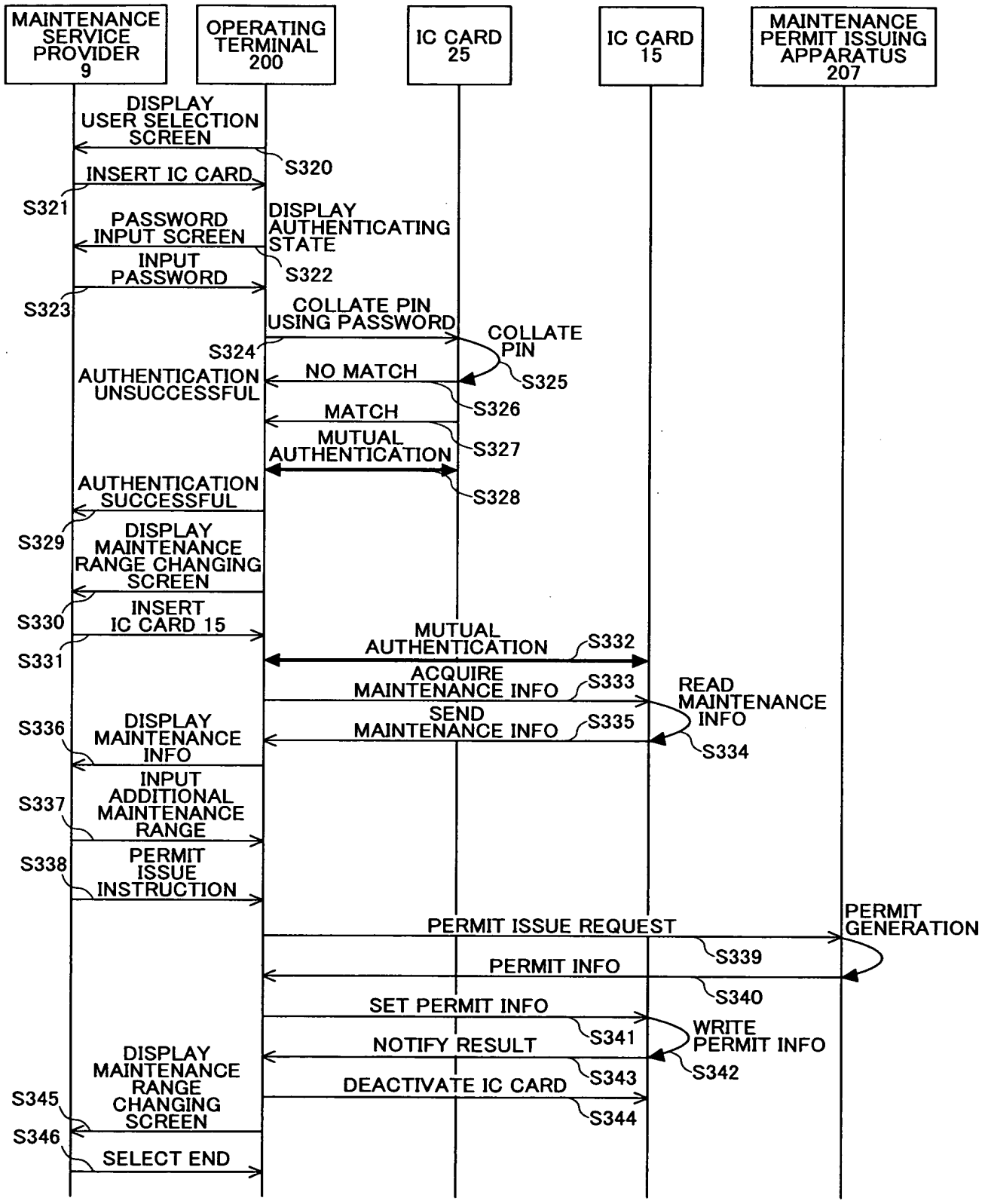

MAINTENANCE SERVICE PROVIDER 9
OPERATING TERMINAL 200
IC CARD 25
IC CARD 15
MAINTENANCE PERMIT ISSUING APPARATUS 207
DISPLAY USER SELECTION SCREEN
S320
INSERT IC CARD
S321
PASSWORD INPUT SCREEN
DISPLAY AUTHENTICATING STATE
S322
INPUT PASSWORD
S323
COLLATE PIN USING PASSWORD
COLLATE PIN
S324
S325
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S326
MATCH
S327
MUTUAL AUTHENTICATION
S328
AUTHENTICATION SUCCESSFUL
S329
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
S330
INSERT IC CARD 15
S331
MUTUAL AUTHENTICATION
S332
ACQUIRE MAINTENANCE INFO
S333
READ MAINTENANCE INFO
S334
SEND MAINTENANCE INFO
S335
S336
DISPLAY MAINTENANCE INFO
INPUT ADDITIONAL MAINTENANCE RANGE
S337
PERMIT ISSUE INSTRUCTION
S338
PERMIT ISSUE REQUEST
PERMIT GENERATION
S339
PERMIT INFO
S340
SET PERMIT INFO
S341
WRITE PERMIT INFO
S342
NOTIFY RESULT
S343
DISPLAY MAINTENANCE RANGE CHANGING SCREEN
DEACTIVATE IC CARD
S344
S345
S346
SELECT END

FIG.32

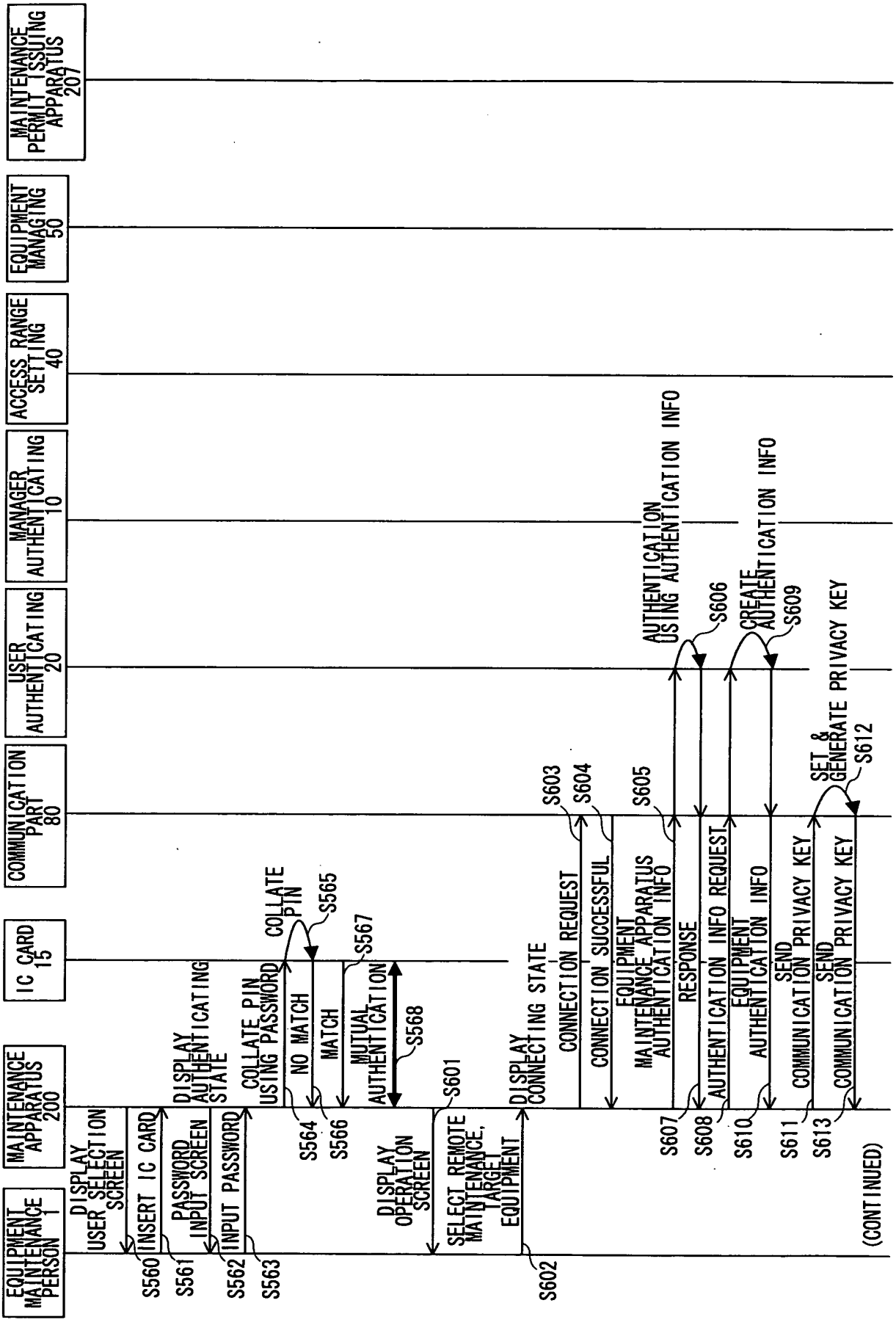

EQUIPMENT MAINTENANCE PERSON 1
MAINTENANCE APPARATUS 200
IC CARD 15
COMMUNICATION PART 80
USER AUTHENTICATING 20
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MANAGING 50
MAINT PERMIT ISSUING APPARATUS 207
DISPLAY USER SELECTION SCREEN
S560
INSERT IC CARD
S561
PASSWORD INPUT SCREEN
S562
INPUT PASSWORD
S563
DISPLAY AUTHENTICATING STATE
COLLATE PIN USING PASSWORD
S564
COLLATE PIN
S565
NO MATCH
S566
MATCH
S567
MUTUAL AUTHENTICATION
S568
DISPLAY OPERATION SCREEN
S601
SELECT REMOTE MAINTENANCE, TARGET EQUIPMENT
S602
DISPLAY CONNECTING STATE
S603
CONNECTION REQUEST
S604
CONNECTION SUCCESSFUL
S605
EQUIPMENT MAINTENANCE APPARATUS AUTHENTICATION INFO
AUTHENTICATION USING AUTHENTICATION INFO
S606
RESPONSE
S607
AUTHENTICATION INFO REQUEST
S608
CREATE AUTHENTICATION INFO
S609
EQUIPMENT AUTHENTICATION INFO
S610
SEND COMMUNICATION PRIVACY KEY
S611
SET & GENERATE PRIVACY KEY
S612
SEND COMMUNICATION PRIVACY KEY
S613
(CONTINUED)

FIG.33

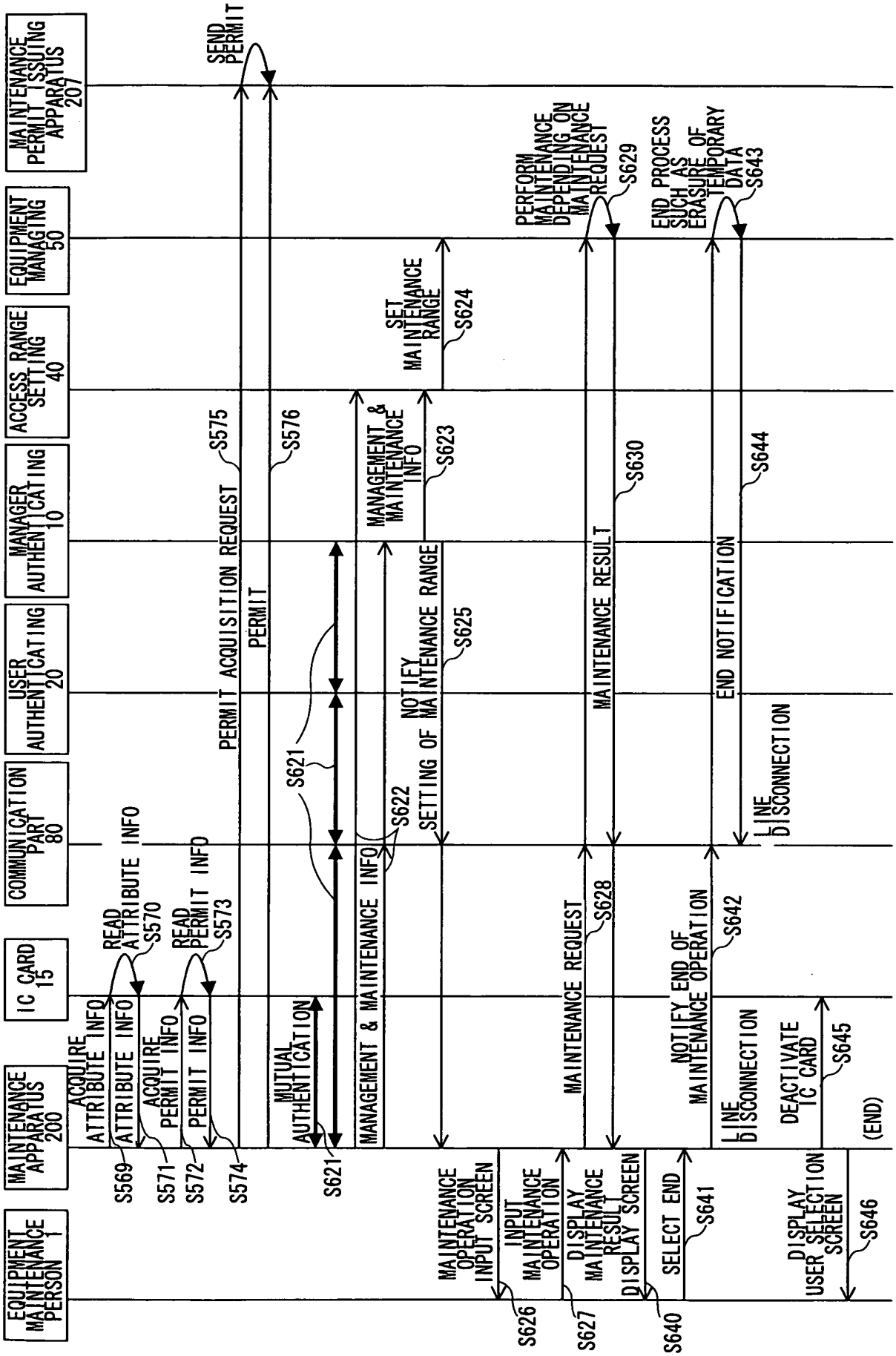

EQUIPMENT MAINTENANCE PERSON 1
MAINTENANCE APPARATUS 200
IC CARD 15
COMMUNICATION PART 80
USER AUTHENTICATING 20
MANAGER AUTHENTICATING 10
ACCESS RANGE SETTING 40
EQUIPMENT MANAGING 50
MAINTENANCE PERMIT ISSUING APPARATUS 207
ACQUIRE ATTRIBUTE INFO
ATTRIBUTE INFO
READ ATTRIBUTE INFO
S569
S570
ACQUIRE PERMIT INFO
PERMIT INFO
READ PERMIT INFO
S571
S572
S573
S574
MUTUAL AUTHENTICATION
S621
PERMIT ACQUISITION REQUEST
PERMIT
S575
S576
MANAGEMENT & MAINTENANCE INFO
S622
MANAGEMENT & MAINTENANCE INFO
SET MAINTENANCE RANGE
S623
S624
NOTIFY SETTING OF MAINTENANCE RANGE
S625
MAINTENANCE OPERATION INPUT SCREEN
INPUT MAINTENANCE OPERATION
S626
MAINTENANCE REQUEST
S628
DISPLAY MAINTENANCE RESULT DISPLAY SCREEN
S627
MAINTENANCE RESULT
S630
PERFORM MAINTENANCE DEPENDING ON MAINTENANCE REQUEST
S629
SELECT END
S640
S641
NOTIFY END OF MAINTENANCE OPERATION
S642
END NOTIFICATION
S644
END PROCESS SUCH AS ERASURE OF TEMPORARY DATA
S643
LINE DISCONNECTION
DEACTIVATE IC CARD
S645
(END)
DISPLAY USER SELECTION SCREEN
S646
SEND PERMIT

FIG.34

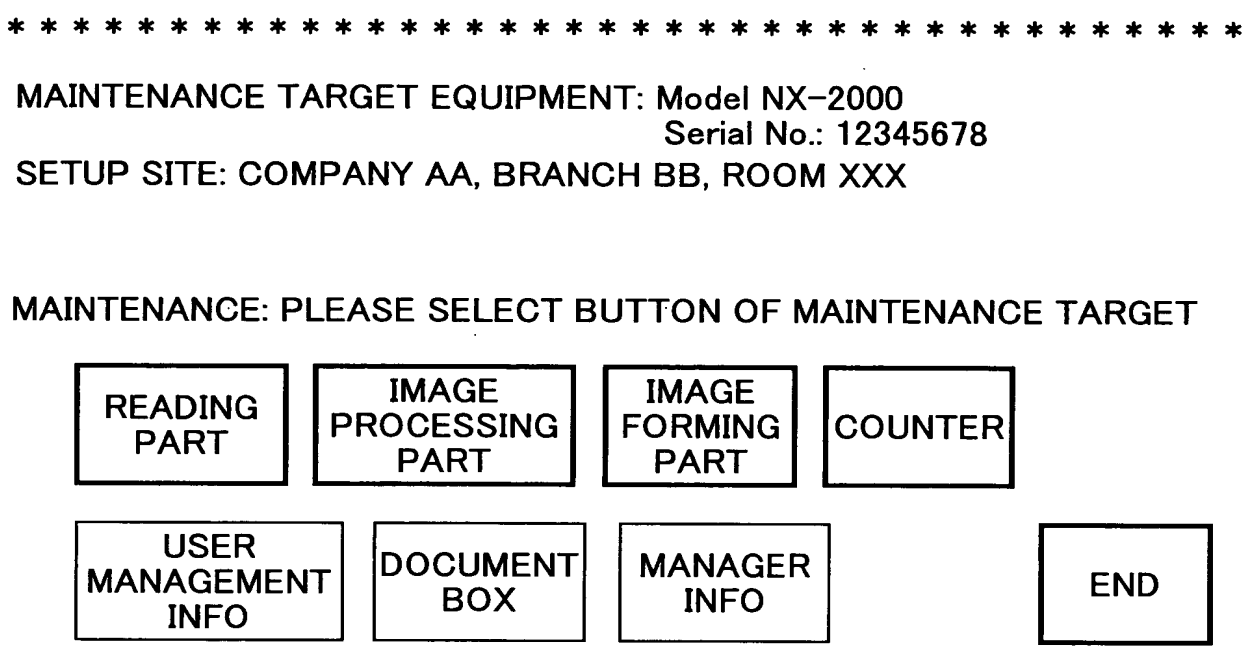

MAINTENANCE TARGET EQUIPMENT: Model NX-2000
Serial No.: 12345678
SETUP SITE: COMPANY AA, BRANCH BB, ROOM XXX
MAINTENANCE: PLEASE SELECT BUTTON OF MAINTENANCE TARGET
READING PART
IMAGE PROCESSING PART
IMAGE FORMING PART
COUNTER
USER MANAGEMENT INFO
DOCUMENT BOX
MANAGER INFO
END

FIG.35

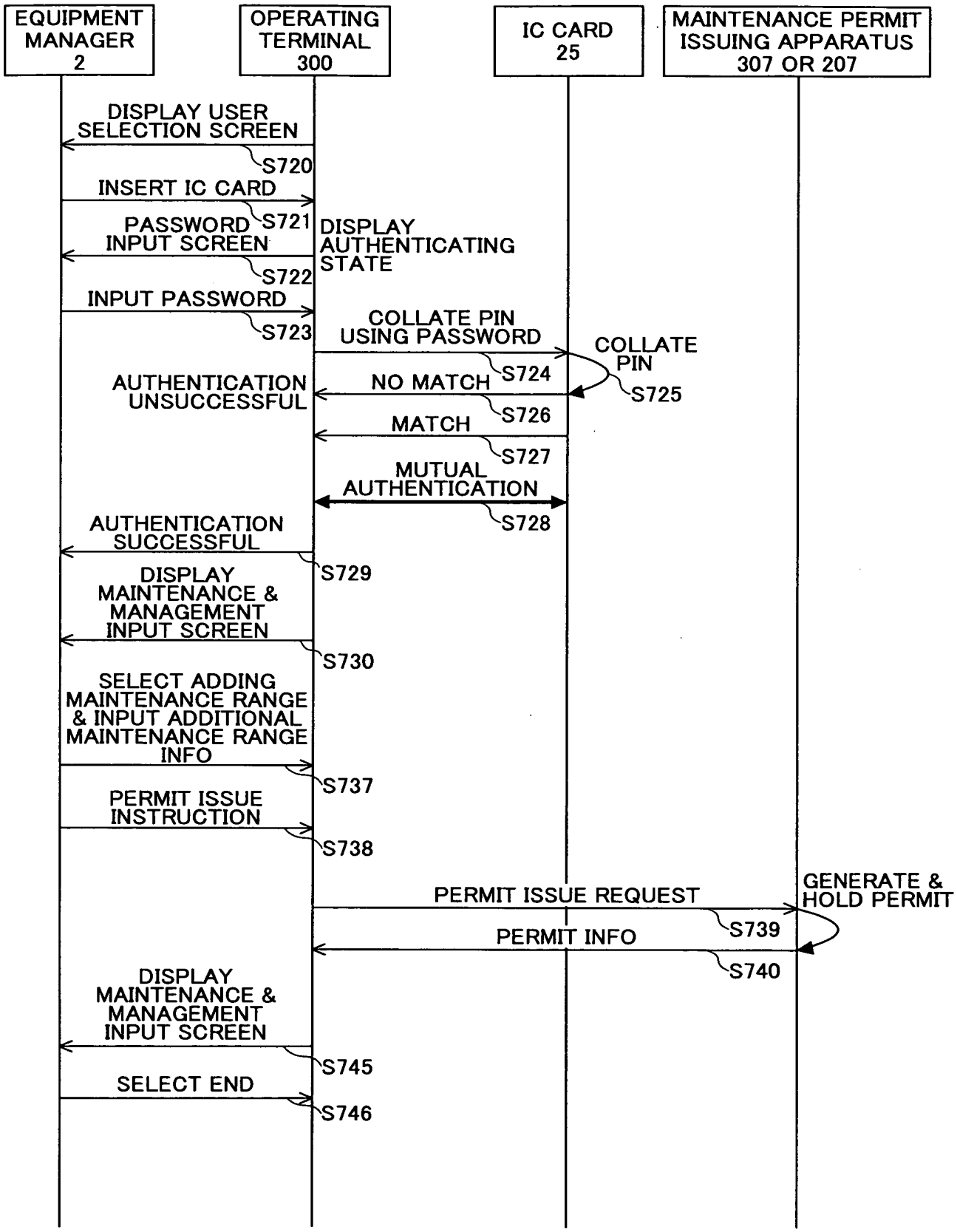

EQUIPMENT MANAGER 2
OPERATING TERMINAL 300
IC CARD 25
MAINTENANCE PERMIT ISSUING APPARATUS 307 OR 207
DISPLAY USER SELECTION SCREEN
S720
INSERT IC CARD
S721
PASSWORD INPUT SCREEN
DISPLAY AUTHENTICATING STATE
S722
INPUT PASSWORD
S723
COLLATE PIN USING PASSWORD
S724
COLLATE PIN
S725
AUTHENTICATION UNSUCCESSFUL
NO MATCH
S726
MATCH
S727
MUTUAL AUTHENTICATION
S728
AUTHENTICATION SUCCESSFUL
S729
DISPLAY MAINTENANCE & MANAGEMENT INPUT SCREEN
S730
SELECT ADDING MAINTENANCE RANGE & INPUT ADDITIONAL MAINTENANCE RANGE INFO
S737
PERMIT ISSUE INSTRUCTION
S738
PERMIT ISSUE REQUEST
GENERATE & HOLD PERMIT
S739
PERMIT INFO
S740
DISPLAY MAINTENANCE & MANAGEMENT INPUT SCREEN
S745
SELECT END
S746

FIG.36

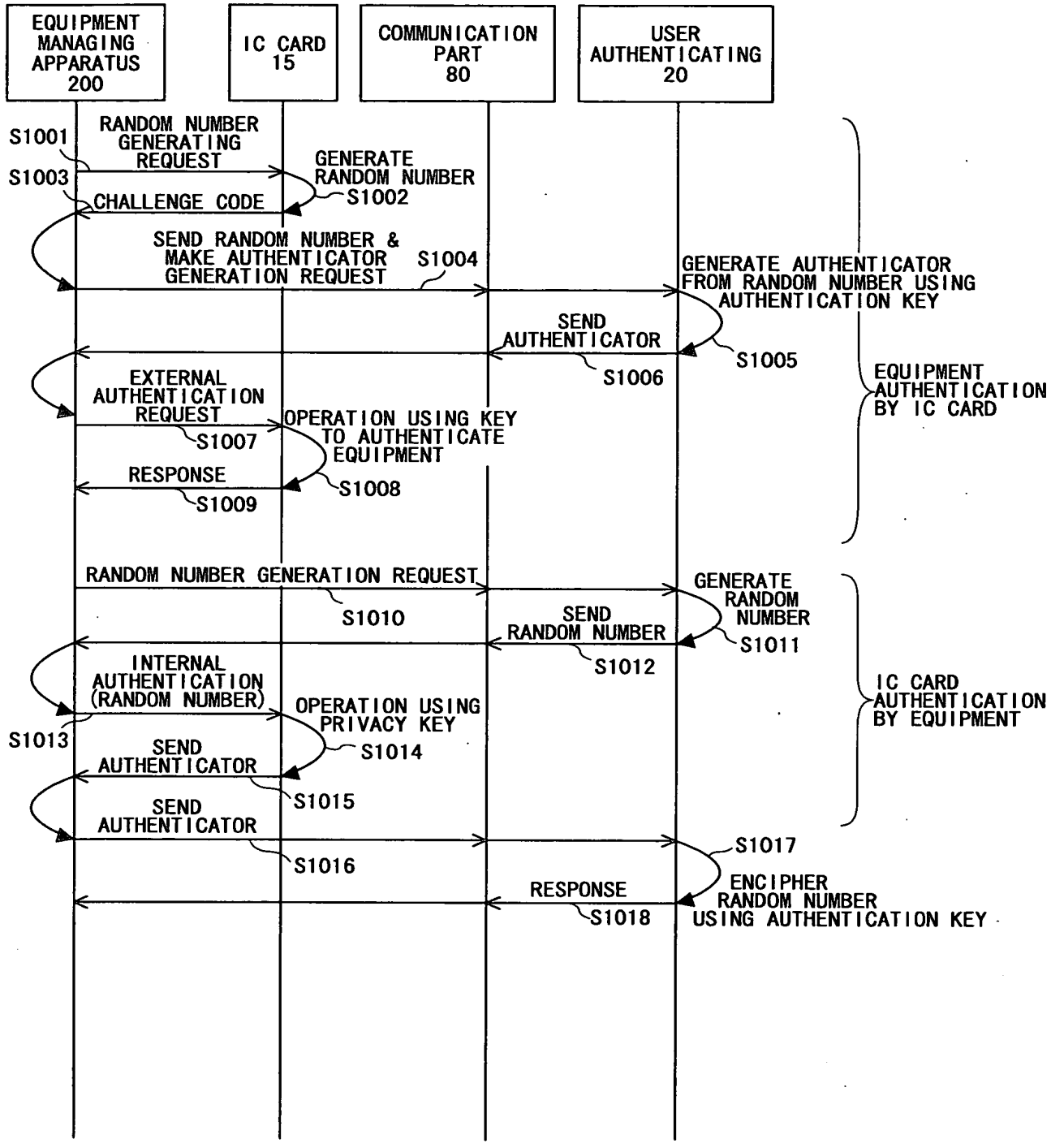
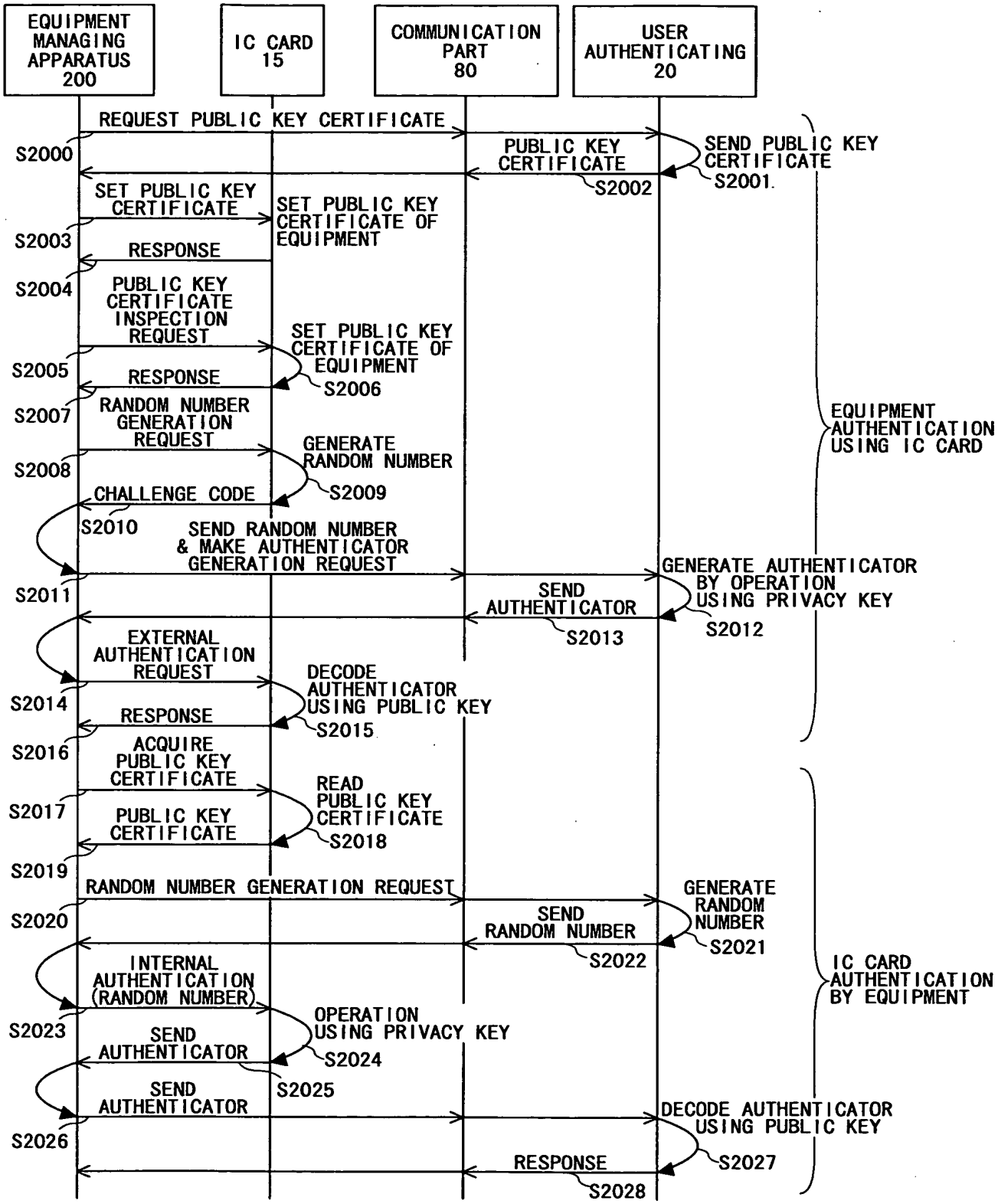

EQUIPMENT MANAGING APPARATUS 200
IC CARD 15
COMMUNICATION PART 80
USER AUTHENTICATING 20
S1001
RANDOM NUMBER GENERATING REQUEST
GENERATE RANDOM NUMBER
S1002
S1003
CHALLENGE CODE
SEND RANDOM NUMBER & MAKE AUTHENTICATOR GENERATION REQUEST
S1004
GENERATE AUTHENTICATOR FROM RANDOM NUMBER USING AUTHENTICATION KEY
SEND AUTHENTICATOR
S1005
S1006
EXTERNAL AUTHENTICATION REQUEST
S1007
OPERATION USING KEY TO AUTHENTICATE EQUIPMENT
S1008
RESPONSE
S1009
EQUIPMENT AUTHENTICATION BY IC CARD
RANDOM NUMBER GENERATION REQUEST
S1010
GENERATE RANDOM NUMBER
S1011
SEND RANDOM NUMBER
S1012
INTERNAL AUTHENTICATION (RANDOM NUMBER)
S1013
OPERATION USING PRIVACY KEY
S1014
SEND AUTHENTICATOR
S1015
SEND AUTHENTICATOR
S1016
S1017
ENCIPHER RANDOM NUMBER USING AUTHENTICATION KEY
RESPONSE
S1018
IC CARD AUTHENTICATION BY EQUIPMENT

FIG.37


EQUIPMENT MANAGING APPARATUS 200
IC CARD 15
COMMUNICATION PART 80
USER AUTHENTICATING 20
REQUEST PUBLIC KEY CERTIFICATE
S2000
PUBLIC KEY CERTIFICATE
S2002
SEND PUBLIC KEY CERTIFICATE
S2001
SET PUBLIC KEY CERTIFICATE
S2003
SET PUBLIC KEY CERTIFICATE OF EQUIPMENT
RESPONSE
S2004
PUBLIC KEY CERTIFICATE INSPECTION REQUEST
S2005
SET PUBLIC KEY CERTIFICATE OF EQUIPMENT
S2006
RESPONSE
S2007
RANDOM NUMBER GENERATION REQUEST
S2008
GENERATE RANDOM NUMBER
S2009
CHALLENGE CODE
S2010
SEND RANDOM NUMBER & MAKE AUTHENTICATOR GENERATION REQUEST
S2011
GENERATE AUTHENTICATOR BY OPERATION USING PRIVACY KEY
S2012
SEND AUTHENTICATOR
S2013
EXTERNAL AUTHENTICATION REQUEST
S2014
DECODE AUTHENTICATOR USING PUBLIC KEY
S2015
RESPONSE
S2016
EQUIPMENT AUTHENTICATION USING IC CARD
ACQUIRE PUBLIC KEY CERTIFICATE
S2017
READ PUBLIC KEY CERTIFICATE
S2018
PUBLIC KEY CERTIFICATE
S2019
RANDOM NUMBER GENERATION REQUEST
S2020
GENERATE RANDOM NUMBER
S2021
SEND RANDOM NUMBER
S2022
INTERNAL AUTHENTICATION (RANDOM NUMBER)
S2023
OPERATION USING PRIVACY KEY
S2024
SEND AUTHENTICATOR
S2025
IC CARD AUTHENTICATION BY EQUIPMENT
SEND AUTHENTICATOR
S2026
DECODE AUTHENTICATOR USING PUBLIC KEY
S2027
RESPONSE
S2028